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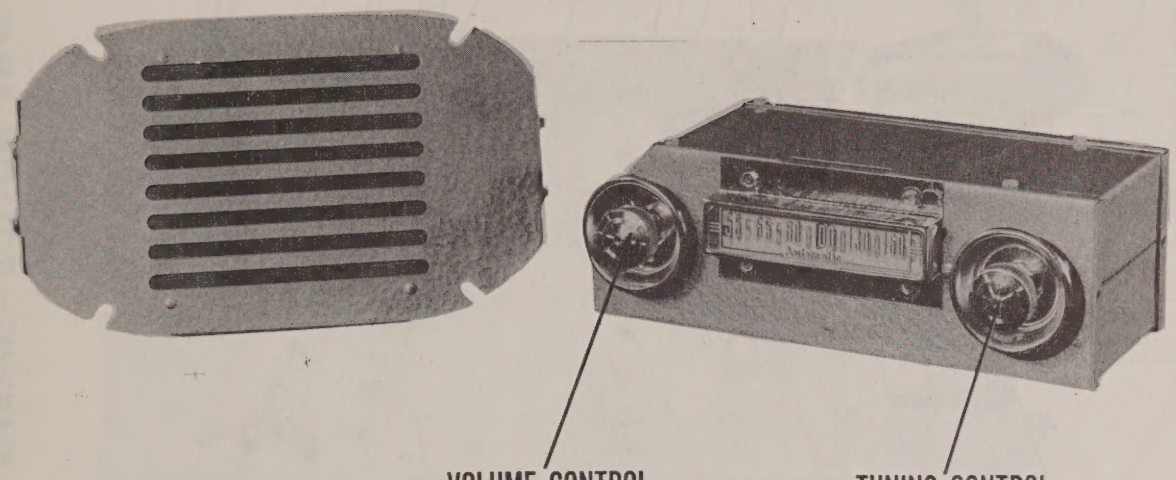
AUTOMATIC
MODEL F-151



AUTOMATIC
MODEL F-151

TRADE NAME	Automatic, Model F-151
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Battery Operated Custom-Built 1951 Ford Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 Det-AVC-AF, 6V6GT or 6AQ25 Power Output, 6X5GT or 6X4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery — RATING 5 Amp, @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set the pointer 2" to the right of the center of the volume control shaft. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6, (V2). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	100MMF	High side to ant. socket. Low side to chassis.	1600KC	"	"	A5	"
3.	"	"	1400KC	Tune for maximum output.	"	A6, A7	"
4.	"	"	600KC	"	"	A8, A9	Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Detector-AVC-AF Amplifier	6AT6	6AT6	7BT	
V5A	Power Output	6V6GT	6V6GT	7AC	
B	Power Output	6AQ5	6AQ5	7BZ	
V6A	Rectifier	6X5GT	6X5GT	6S	
B	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	CE-86	AFH 3-107		UP2235C		TVL-3678	■ Filter
B	20	350							▲ Filter
C	20	25							Output Cathode
C2	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Screen
C4	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	100		CC200	SI100	D6-101	5W5T1	GPIK-101	5GA-T1	Osc. Grid Cap.
C6	220		CC201	SI220	D6-221	5W5T25	GPIK-221	5GA-T22	Diode RF Filter
C7	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C8	220		CC201	SI220	D6-221	5W5T25	GPIK-221	5GA-T22	AF Amp. Plate
C9	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C10	220		CC201	SI220	D6-221	5W5T25	GPIK-221	5GA-T22	Output Grid *
C11	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Output Plate
C12	.008	1600	C205			PTE16D8		MB-D8	Buffer Cap.
C13	.5	100	C209	P185-5		GT2P5		68P20	Hash Filter
C14	.5	100	C209	P185-5		GT2P5		68P20	Hash Filter

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Automatic PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-75 ϕ	Q13-137	AG-79-Z		Volume Control
B	Shaft		Not Req.	Not Req.	FS-3		Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWB		Attach to R1A Per Instructions

ϕ Some sets use control having part number RV-100.

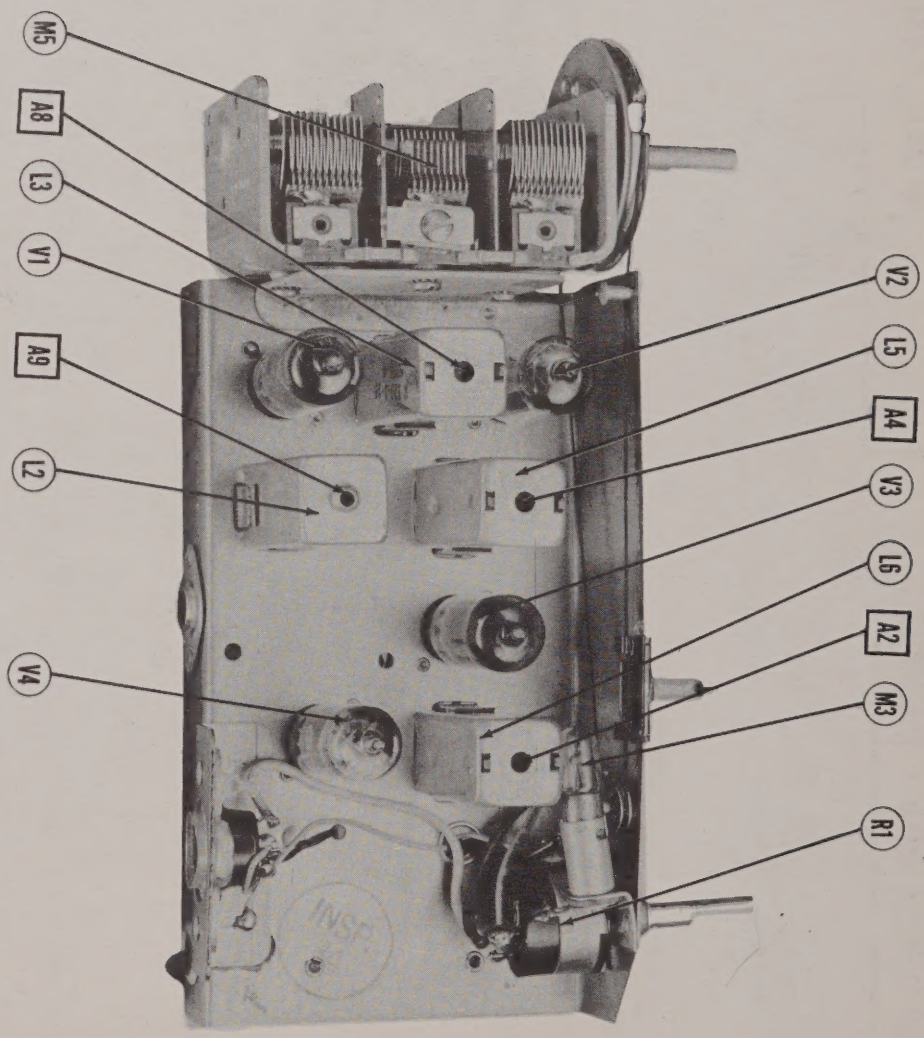
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
R2	330Ω	½	R303	BTS-330	RF Amp. Cathode
R3	1Meg	½	R309	BTS-1Meg	AVC Network
R4	22KΩ	½	R306	BTS-22K	Osc. Grid
R5	1500Ω	½	R314	BTS-1500	IF Amp. Cathode
R6	2Meg	½	R310	BTS-2.2Meg	AVC Network
R7	22KΩ	2	R313	BTB-22K	Screen Dropping
R8	10Meg	½	R311	BTS-10Meg	AF Amp. Grid
R9	270KΩ	½	R307	BTS-270K	AF Amp. Plate
R10	470KΩ	½	R308	BTS-470K	Output Grid
R11	330Ω	½	R303	BTS-330	Output Cathode
R12	1000Ω	1	R312	BTA-1000	Filter
R13	100Ω	½	R301		Hash Suppressor
R14	100Ω	½	R301		Hash Suppressor

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC ② 3A	425VCT .038ADC			TV-100 or 318V-2		P-2970	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T2	4.8KΩ	3.4Ω	260Ω	.7Ω		A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AUTOMATIC	JENSEN	QUAM	
	FIELD RES.	V.C. IMP.	PART No.	PART No.	PART No.	
SP1	PM	3.4Ω	PM-705	ST803 Mod. P525-V	52A1	
	CONE DIA.	V.C. DIA.				
SP2	5"	9/16				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AUTOMATIC PART No.		
L1	Ant. Hash Choke	1.5Ω		L200		
L2A	Ant. Coil	14Ω	5Ω	57FB-3		
B	Ant. Coil			15053		Alternate
L3A	RF Coil	100Ω	7.5Ω	57FB-4		
B	RF Coil			15054		Alternate
L4	Osc. Coil	9Ω	Tapl: 5Ω	L201		
L5A	1st IF	21Ω	21Ω	1655-16		
B	1st IF			14977		Alternate
L6A	2nd IF	21Ω	21Ω	1655-16		
B	2nd IF			14977		Alternate
L7	Hash Choke	.3Ω		L202		
L8	Hash Choke	.2Ω		L203		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				Automatic PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT.	6.3 VDC	115 ∿	V-83	5301	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			AUTOMATIC PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	15A	A201	A300	311015	155020	

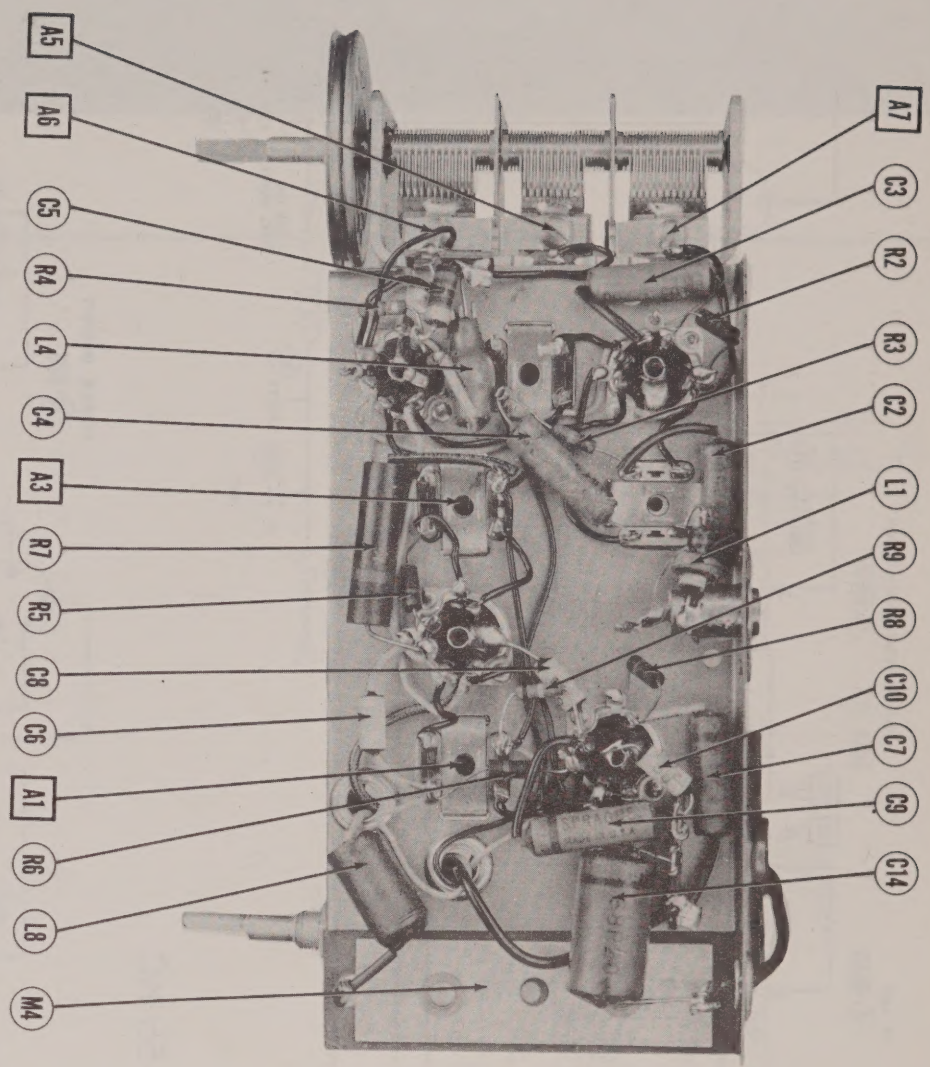
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AUTOMATIC PART No.		
M3	Bayonet	6-8	.15	Brown	T47		Type number 47.

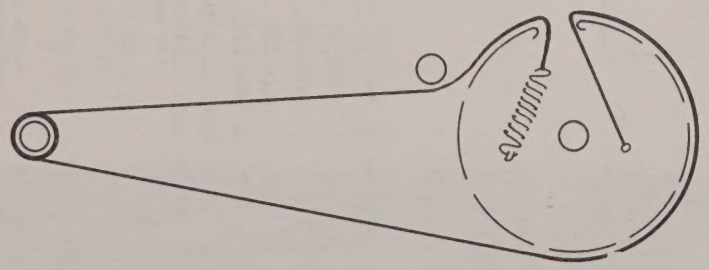
MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M4	Spark Plate		
M5	3 Gang Var. Cap.	CV-100A	(23-391MMF, 24-387MMF, 35-198MMF)
	Dial Scale	D151	
	Dial Pointer	PS151	
	Knob	H155	

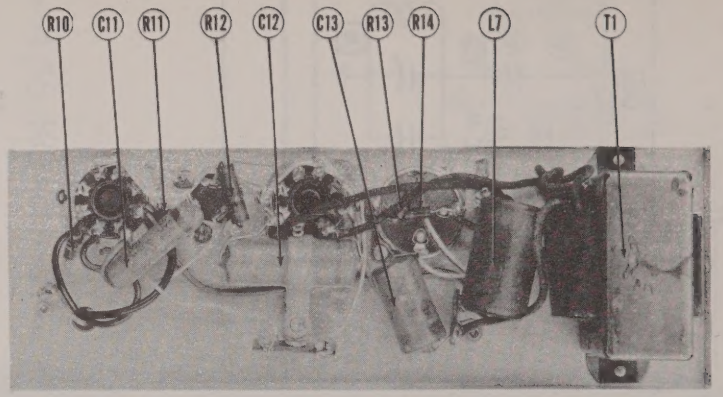
CHASSIS—BOTTOM VIEW

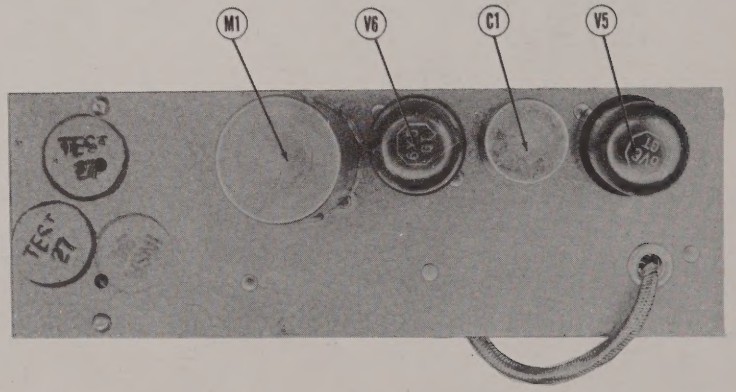


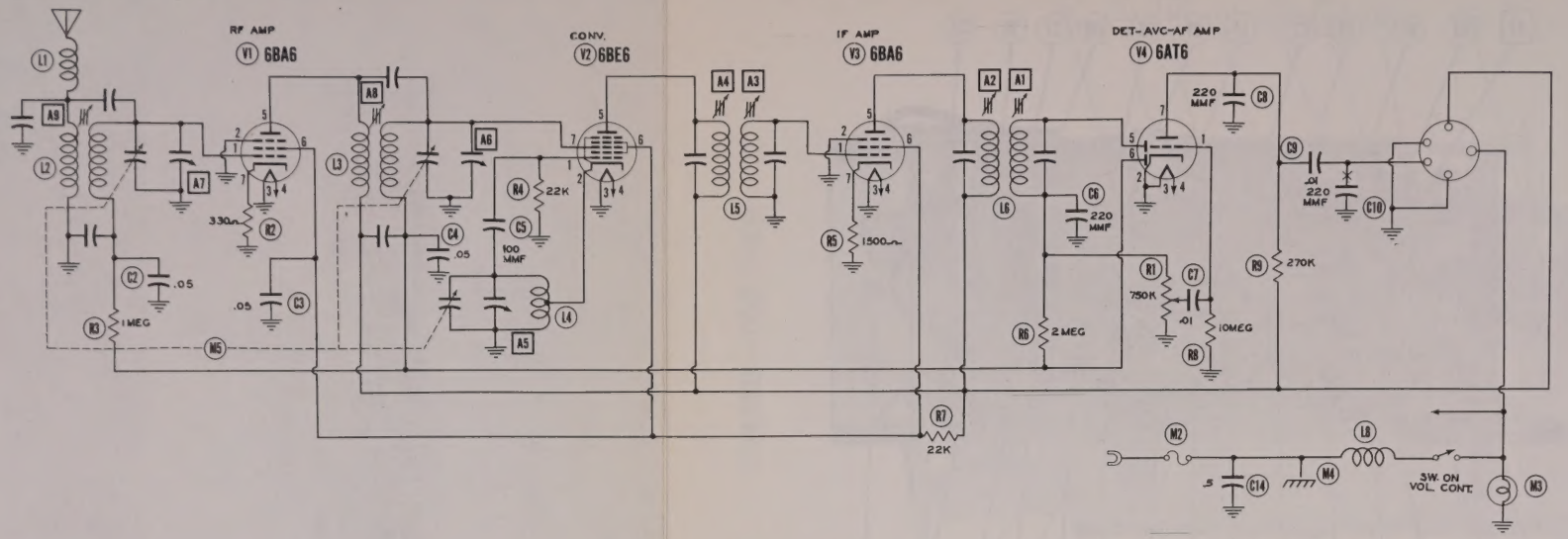
TUNING GANG FULLY CLOSED



DIAL CORD DRIVE







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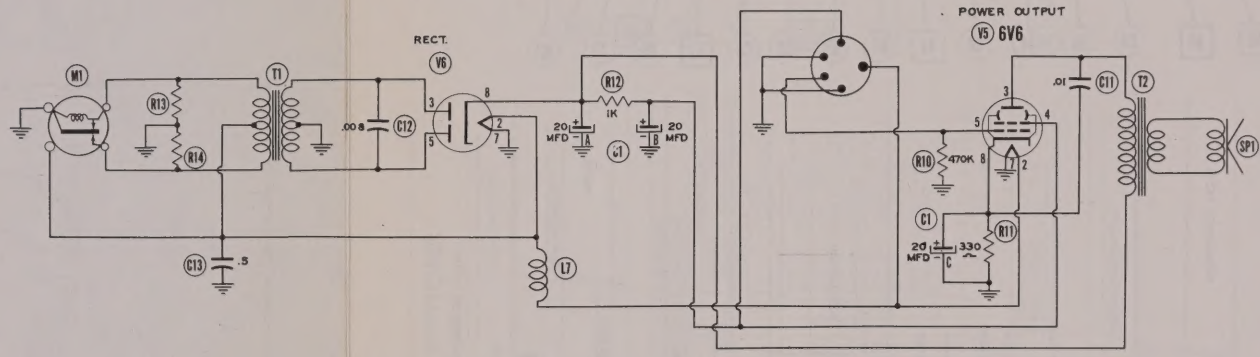

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	-.1VDC	0V	0V	6.3VDC	205VDC	80VDC	2.1VDC	
V 2	6BE6	§-5.8VDC	0V	0V	6.3VDC	205VDC	80VDC	-.4VDC	
V 3	6BA6	0V	0V	0V	6.3VDC	205VDC	80VDC	4.8VDC	
V 4	6AT6	-.7VDC	0V	0V	6.3VDC	-.4VDC	-.4VDC	75VDC	
V 5	6V6GT	0V	6.3VDC	215VDC	205VDC	0V	0V	0V	10.4VDC
V 6	6X5GT	0V	6.3VDC	260VAC	0V	260VAC	0V	0V	230VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.7Meg	0Ω	0Ω	.4Ω	†1KΩ	†23KΩ	330	
V 2	6BE6	22KΩ	.9Ω	0Ω	.4Ω	†1KΩ	†23KΩ	2.7Meg	
V 3	6BA6	21Ω	0Ω	0Ω	.4Ω	†1KΩ	†23KΩ	1.5KΩ	
V 4	6AT6	10Meg	0Ω	0Ω	.4Ω	750KΩ	2.7Meg	†270KΩ	
V 5	6V6GT	Inf.	.4Ω	†265Ω	†.1KΩ	500KΩ	Inf.	0Ω	330Ω
V 6	6X5GT	Inf.	.4Ω	250Ω	Inf.	260Ω	Inf.	0Ω	40KΩ

† MEASURED FROM PIN 8 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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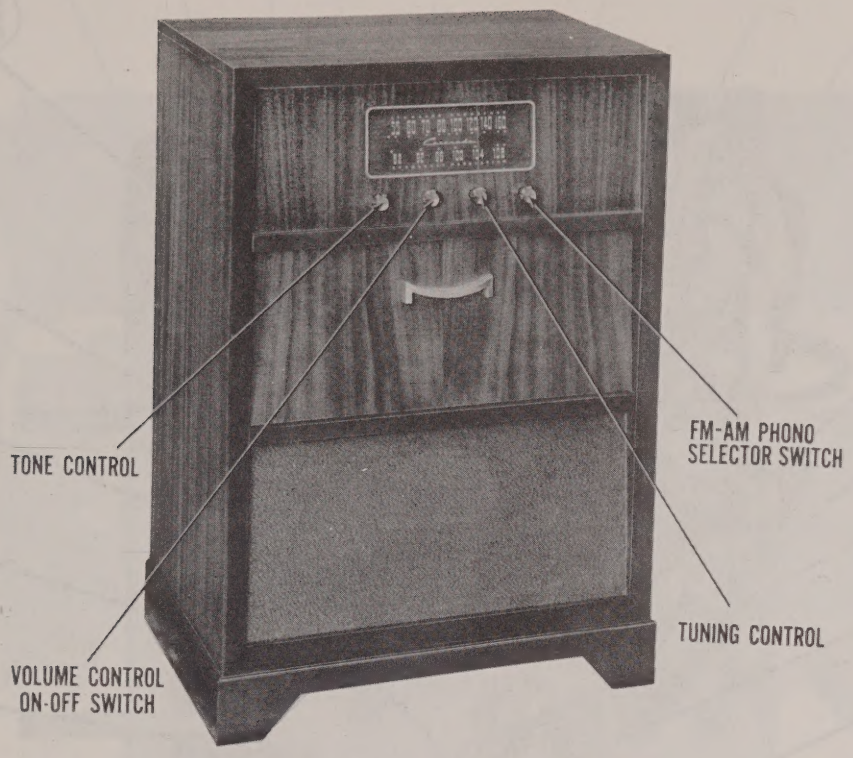
CORONADO
MODEL 15RA1-43-7654A

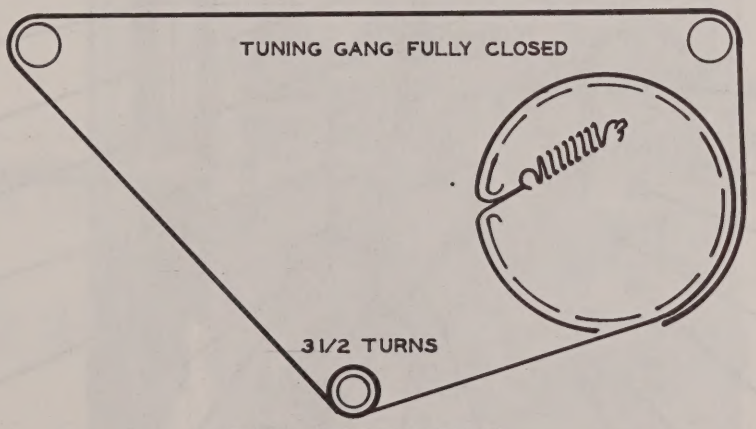
CORONADO
MODEL 15RA1-43-7654A



CORONADO
MODEL 15RA1-43-7654A

TRADE NAME	Coronado, Model 15RA1-43-7654A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver
TUBES (EIGHT)	Types 12AT7 FM RF-Mixer 6BE6 FM Osc.-AM Conv., 6BA6 1st IF Amp. 6BA6 FM 2nd IF, 6AL5 Ratio Det., 6AV6 Det.-AVC-AF, 6V6GT Power Output, 6X5 Rectifier
POWER SUPPLY	105-125 Volts AC
	RATING .30 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	540-1600KC Freq. Mod. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE MISCELLANEOUS SERIES 700F 33/45 IN PHOTOFACT SET 75 FOLDER 11 OR RECORD CHANGER MANUAL CM-3.



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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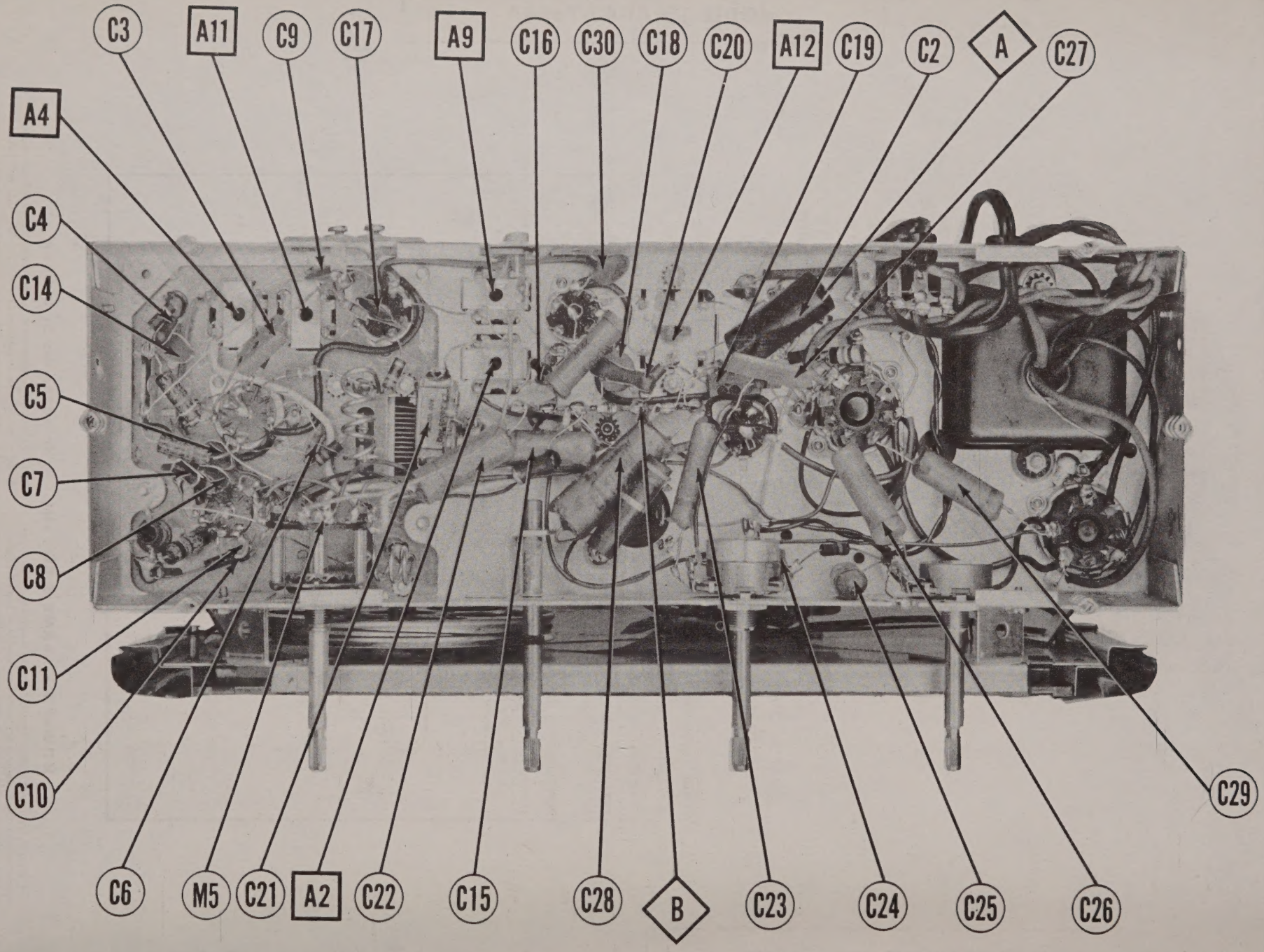
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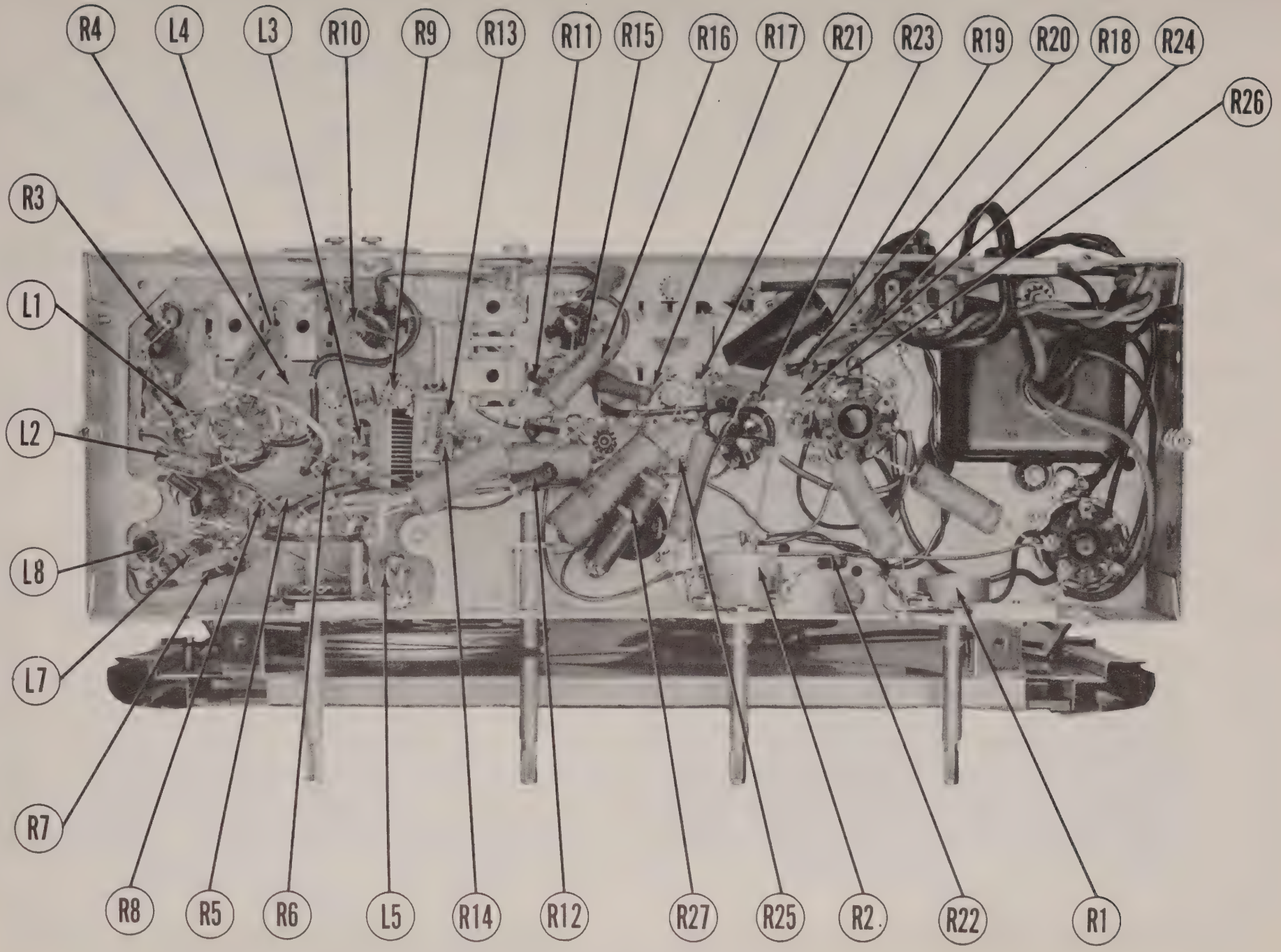
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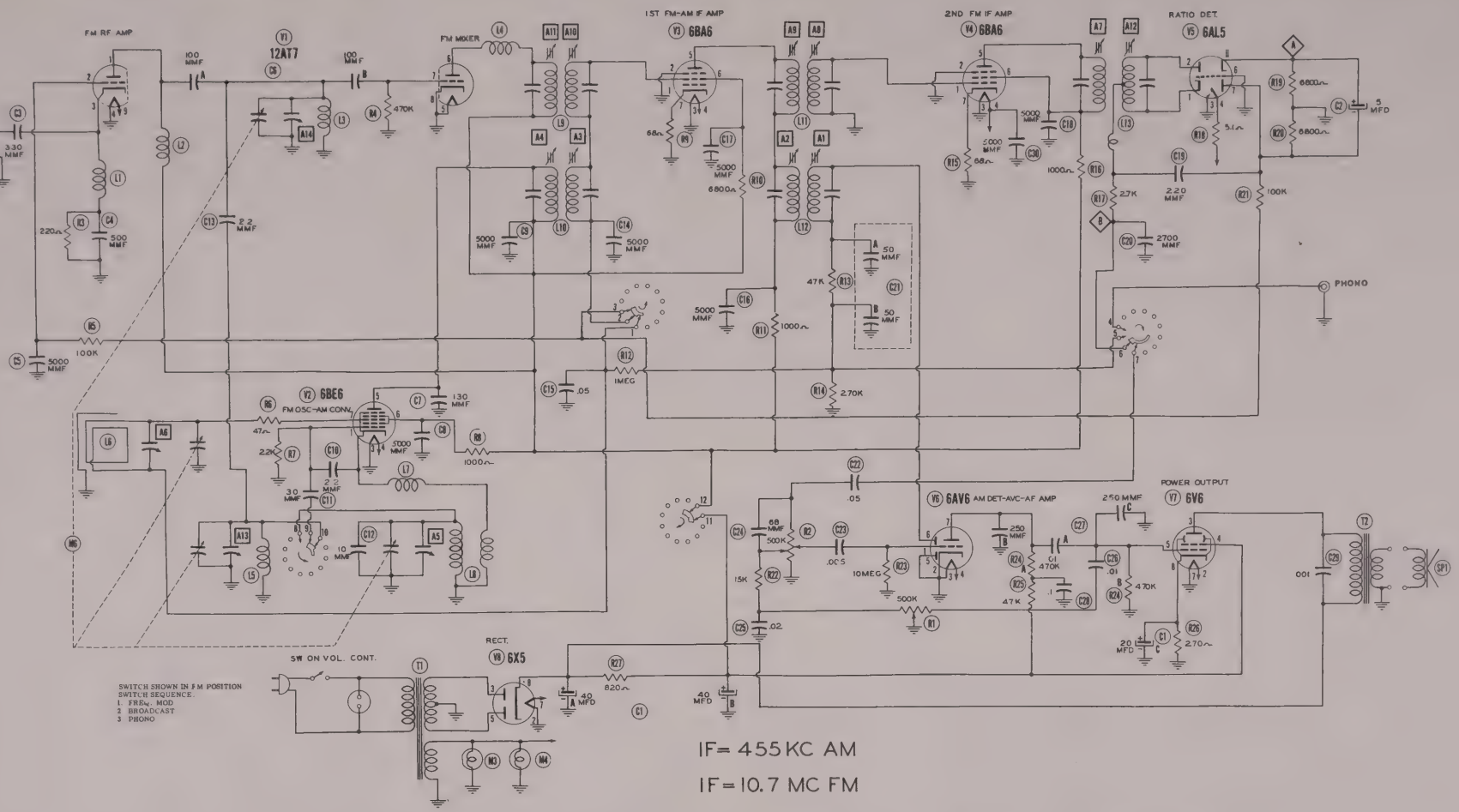

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7 ‡	110VDC	0V	1.1VDC	0V	0V	110VDC	‡‡-1.6VDC	0V	6.3VAC
V 2	6BE6	‡-4.6VDC	0V	0V	6.3VAC	110VDC	100VDC	-.2VDC		
V 3	6BA6	‡-.1VDC -.3VDC	0V	0V	6.3VAC	100VDC	90VDC	.9VDC		
V 4	6BA6 ‡	0V	0V	≡≡	6.3VAC	100VDC	100VDC	1.2VDC		
V 5	6AL5 ‡	.1VDC	.1VDC	0V	4.7VAC	0V	0V	0V		
V 6	6AV6	-.6VDC	0V	0V	6.3VAC	0V	‡-4.6VDC -3.8VDC	53VDC		
V 7	6V6GT	0V	6.3VAC	145VDC	110VDC	0V	0V	0V	5.7VDC	
V 8	6X5	0V	0V	155VAC	0V	155VAC	0V	6.3VAC	155VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7 ‡	†820Ω	200KΩ	220Ω	0Ω	0Ω	†820Ω	470KΩ	0Ω	.1Ω
V 2	6BE6	22KΩ	2.1Ω	0Ω	.1Ω	†820Ω	†1.5MΩ	1.3Meg		
V 3	6BA6	†100KΩ †1.3Meg	0Ω	0Ω	.1Ω	†1.8KΩ	†7.6KΩ	68Ω		
V 4	6BA6 ‡	1Ω	0Ω	0Ω	.1Ω	†1.6KΩ	†1.8KΩ	68Ω		
V 5	6AL5 ‡	Inf.	Inf.	0Ω	2.2Ω	6.8KΩ	0Ω	6.8KΩ		
V 6	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	270KΩ	155OKΩ		
V 7	6V6GT	Inf.	.1Ω	†440Ω	†820Ω	500KΩ	0Ω	≡≡	270Ω	
V 8	6X5	Inf.	0Ω	14Ω	Inf.	14Ω	Inf.	≡≡	100KΩ	

† MEASURED FROM PIN 8 OF V8.

ALL MEASUREMENTS TAKEN IN AM POSITION UNLESS OTHERWISE NOTED.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 (V2) Low side to chassis.	455KC (400∿Mod.)	AM (center)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	"	A5	"
3.		Loop 1400KC	"	"	Tune for max. output.	"	A6	Adjust for maximum output. Set pointer to 1400 on AM scale.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	2500MMF	High side to pin 1 (Grid) of 6BA6 (V3) Low side to chassis.	10.7MC (unmod.)	FM (CW)	Tuning gang fully open.	DC probe to point (A). Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
5.	"	High side to pin 7 (Grid) of 12AT7 (V1) Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	2500MMF	High side to pin 1 (Grid) of 6BA6 (V3) Low side to chassis.	10.7MC (450KC SWP)	FM (CW)	Point of non-interference.	Vert. Amp. to point (A). Low side to chassis.	A7, A8 A9	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
5.	"	High side to pin 7 (Grid) of 12AT7 (V1) Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12, so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω	High side thru 300Ω to ungrounded FM ant. terminal. Low side to chassis.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC probe to point (A) Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	104.5MC	"	Tune for max. deflection.	"	A14	"

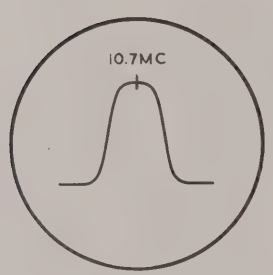


FIG. 1

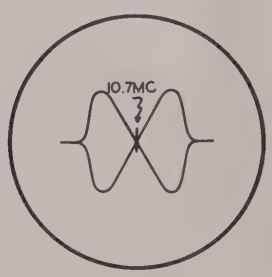


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	FM RF Amplifier	12AT7	12AT7	9A	
V2	FM Osc.-AM Converter	6BE6	6BE6	7CH	
V3	1st FM AM IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	AM Detector-AVC-AF Amplifier	6AV6	6AV6	7BT	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X5	6X5	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	250	45X360	AFH3-100		UP4445C			● Filter
B	40	150							■ Filter
C	20	25							▲ Output Cathode
C2	5	100	45X361	PRS150/4		BR415		TVA-1402	Stabilizing Cap.
C3	330	500	47X470	1469-00035	D6-331		GP2K-331	1FM-335	RF Coupling
C4	500		47X508	SI500	D6-501	5W5T5	GP2K-501	5GA-T5	RF Amp. Cathode
C5	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Amp. Grid
C6A	100		76X4	SI100D6	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
B	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
C7	130		47X559		TCN-130		N750L-131		Fixed Trimmer
C8	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Osc. Anode
C9	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv. Plate
C10	2.2		47X557		TCZ-2.2		NP0K-2R2		Osc. Feedback
C11	30		47X558		TCN-30		N750K-300		Osc. Grid cap.
C12	10		47X523	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C13	2.2		47X557		TCZ-2.2		NP0K-2R2		Osc. Coupling
C14	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter *
C15	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C16	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Plate
C17	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Screen
C18	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Dec.
C19	220	500	47X468	1469-00025	D6-221	5R5T25	GP2K-221	1FM-325	Diode Load Cap.
C20	2700		47X492	SI2700	D6-272	5R5D3	GP2-333-272	1FM-23	De-emphasis
C21A	50		47X112	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
B	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
C22	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C23	.005	400	D66502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C24	68	500	47X471	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	Tone Comp.
C25	.02	200	B66203	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C26	.01	200	B66103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C27A	.01			P688-01		PTE6S1		6TM-S1	Audio Coupling †
B	250				♦PC-80				AF Amp. Plate ‡
C									Output Grid *
C28	.1	400	D66104	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C29	.001	800	H66102	P1088-001		PTE16D1		MB-D1	Output Plate
C30	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Fil.

† Some models use .02MFD in this application. (Mfgrs. Part # D66203)
‡ Some models use 220MMF in this application. (Mfgrs. Part # 47X468)
* Not used in all models.
♦ Items C27A, C27B, C27C, R24A, R24B are combined in one unit. When replacing separately C27B and C27C should total 250MMF.

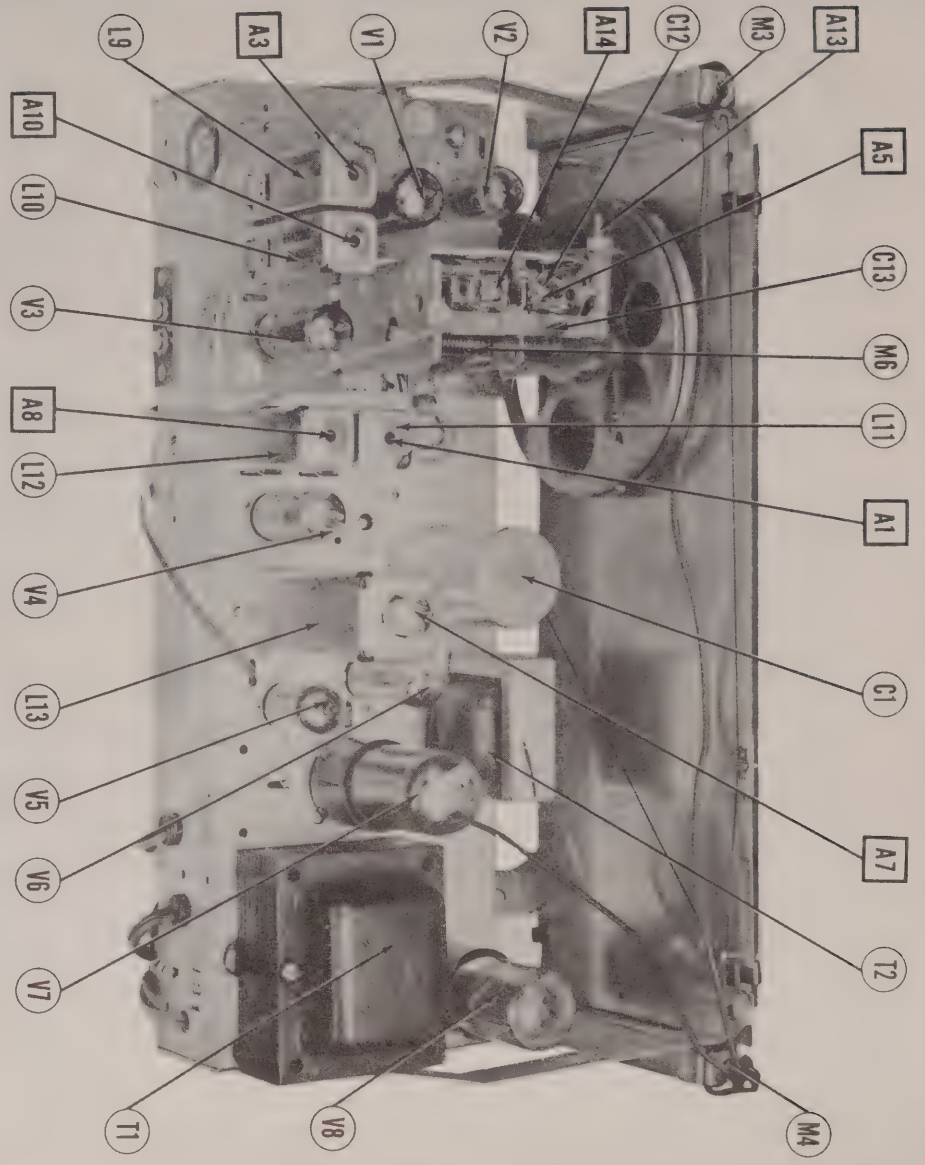
CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	40X310	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A Per Instructions
R2A	500KΩ	½	36X372	Q13-133X	AK-80	BTSK-66-5	Volume Control-Tapped@ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A Per Instructions
C	Switch		Not Req.	76-1	SW-B	Not Req.	Attach to R2A Per Instructions

SET 147

FOLDER 3

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
R3	220Ω	½	B84221	BTS-220	FM RF Cathode
R4	470KΩ	½	B85474	BTS-470K	FM Mixer Grid
R5	100KΩ	½	B85104	BTS-100K	AVC Network
R6	47Ω	½	B85470		Parasitic Suppressor
R7	22KΩ	½	B85223	BTS-22K	Osc. Grid
R8	1000Ω	½	B85102	BTS-1000	Osc. Anode
R9	68Ω	½	B84680		1st. IF Cathode
R10	6800Ω	½	B84682	BTS-6800	1st. IF Screen
R11	1000Ω	½	B85102	BTS-1000	1st. IF Plate Decoupling
R12	1Meg	½	B85105	BTS-1Meg	AVC Network
R13	47KΩ	½	B85473	BTS-47K	Diode Filter
R14	270KΩ	½	B84274	BTS-270K	Diode Load
R15	68Ω	½	B84680		2nd. FM IF Cathode
R16	1000Ω	½	B85102	BTS-1000	2nd. MF IF Decoupling
R17	27KΩ	½	B85273	BTS-27K	De-emphasis
R18	5.1Ω	3	43X233		Ratio Det. Filament - Wire Wound
R19	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R20	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R21	100KΩ	½	B85104	BTS-100K	AVC Network
R22	15KΩ	½	B85153	BTS-15K	Tone Compensation
R23	10Meg	½	B85106	BTS-10Meg	AF Amp. Grid
R24A	470KΩ	½	♦	BTS-470K	AF Amp. Plate
B	470KΩ	½	♦	BTS-470K	Output Grid
R25	47KΩ	½	B85473	BTS-47K	AF Amp. Plate Decoupling
R26	270Ω	½	B84271	BTS-270	Output Cathode
R27	820Ω	2	D84821	BW-2-820	Filter

♦ Items R24A, R24B, C27A, C27B and C27C are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② .3A	300VCT .067ADC	6.3VAC ② 3A		53X291	PM8419 ①	P-3051 ①	PH-70 ②

① Add series resistor to reduce plate voltage.
② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.6KΩ	3.2Ω	440Ω	.85Ω	51X134	A-3877③	A-2930 ③	RO-9 ③	③ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	V.C. IMP.	CORONADO PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.2Ω	12A480	10J12	10A4A	
	CONE DIA.	V.C. DIA.				
SP2	9 3/6"	1"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CORONADO PART No.		IRC PART No.	
L1	Cathode Choke	.2Ω		35A9		CLA	.47 Microhenry
L2	RF Choke	3Ω		35A8		CLA	3.3 Microhenries
L3	FM Ant. Coil	0Ω		9A2066			
L4	Parasitic Supp.	0Ω		9A2103			
L5	FM Osc.	0Ω		9A2067			
L6	AM Load Ant.	1.4Ω	.1Ω	9A2146			
L7	RF Choke	1.8Ω		35A5		CLA	2.2 Microhenries
L8	AM Osc.	.5Ω	5.2Ω	9A2065			
L9	1st FM IF	.9Ω	.9Ω	9A2060			
L10	1st AM IF	13Ω	15Ω	9A2062			
L11	2nd FM IF	1Ω	1Ω	9A2061			
L12	2nd AM IF	13Ω	14.8Ω	9A2063			
L13	Ratio Det. Trans.	1.2Ω	.1Ω	9A2161			

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								REMARKS
	CORONADO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	CORONADO PART No.	WALCO PART No.	
M2		W-20AGA W-21AGS	Osmium Sapphire

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CORONADO PART No.		
M3	Bayonet	6-8	.15	Brown	7A103		Type number 47.
M4	Bayonet	6-8	.15	Brown	7A103		Type number 47.

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M5	Switch	2A393	FM-AM-Phono
M6	2 Gang Var. Cap.	14A209	(19-522MMF, 38-220MMF)
A6	Trimmer	17A256	Ant. Adj.
	Dial Glass	58X741	
	Dial Pointer	15X251	
	Knob	10A759	

PHOTOFACT* Folder

*TRADE MARK

CROSLEY MODELS
11-441MU, 11-461WU, 11-471BU

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MODEL 11-471BU

CROSLEY MODELS
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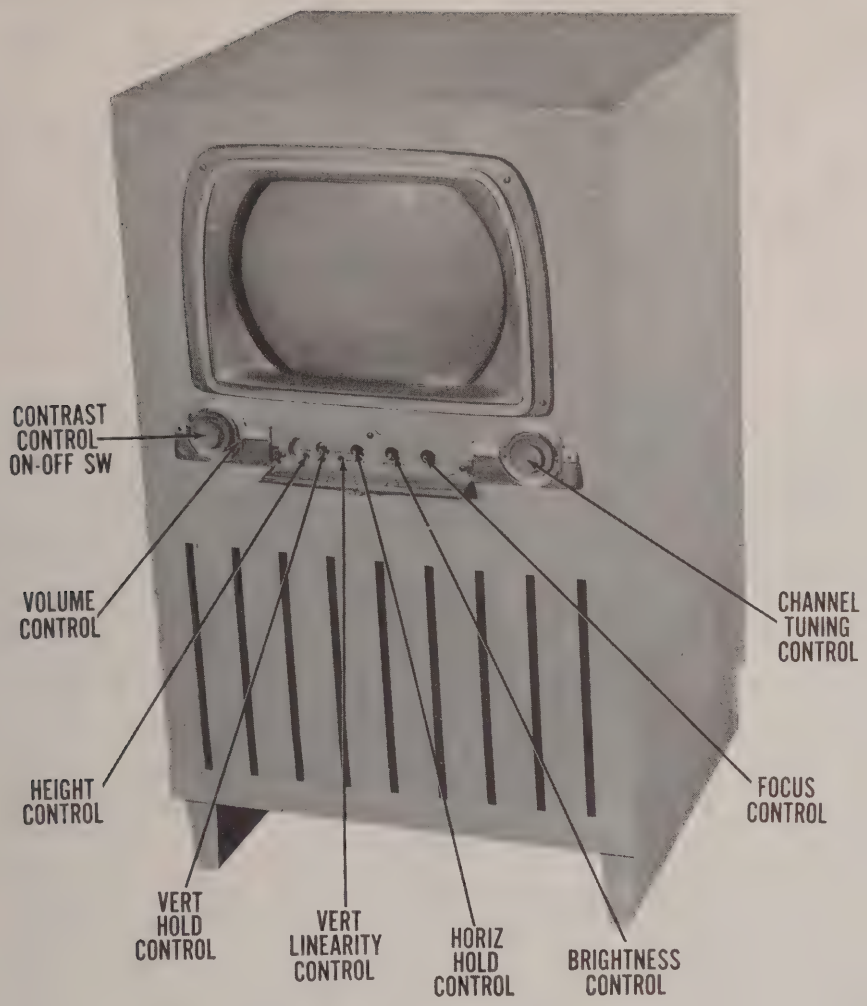

CROSLEY MODELS
11-441MU, 11-461WU, 11-471BU

CROSLEY MODEL 11-471BU

TRADE NAME	Crosley Models 11-441MU, 11-461WU, 11-471BU (Ch. 320)
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.5 Amp. at 117 Volts AC
TUNING RANGE	CHANNELS 2 thru 13

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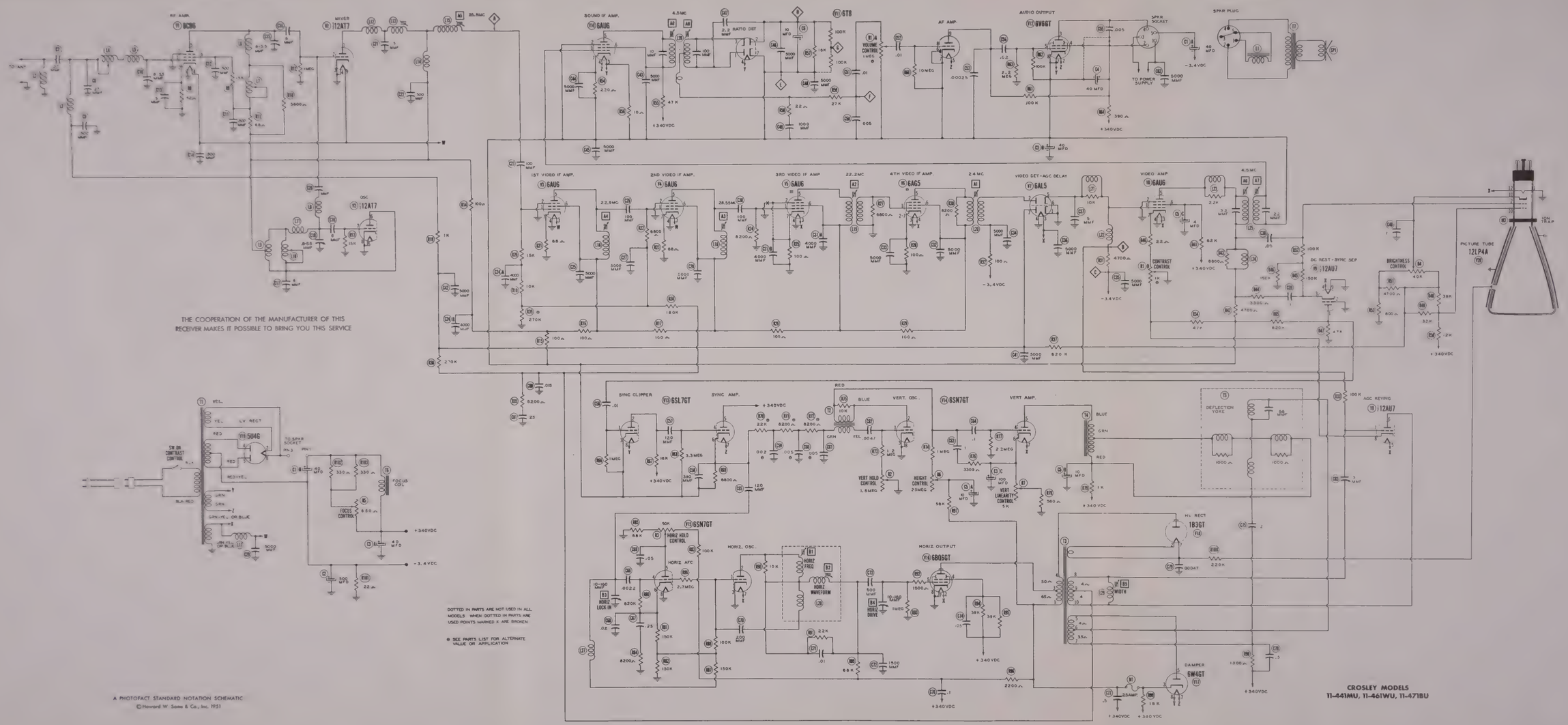

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⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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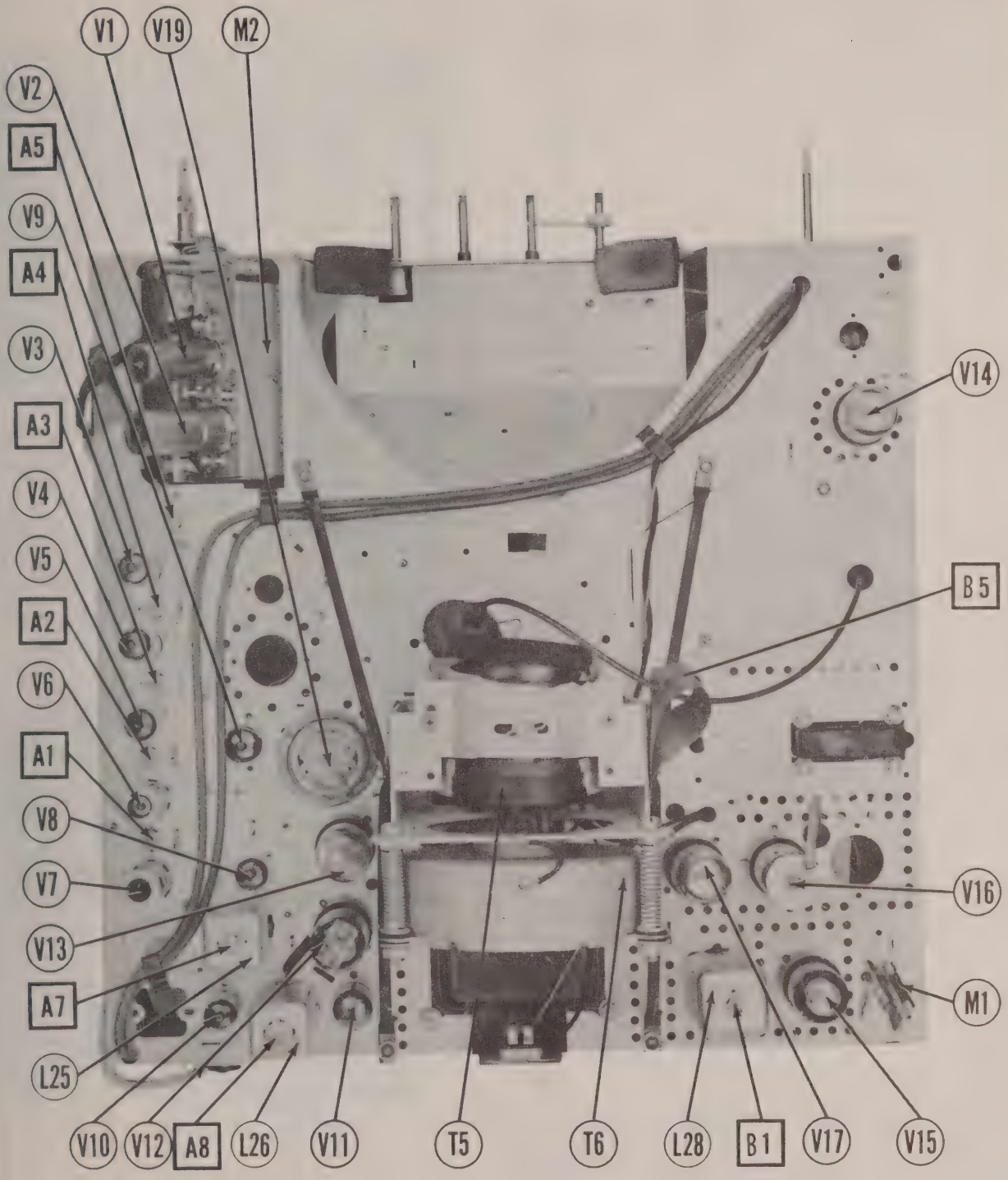
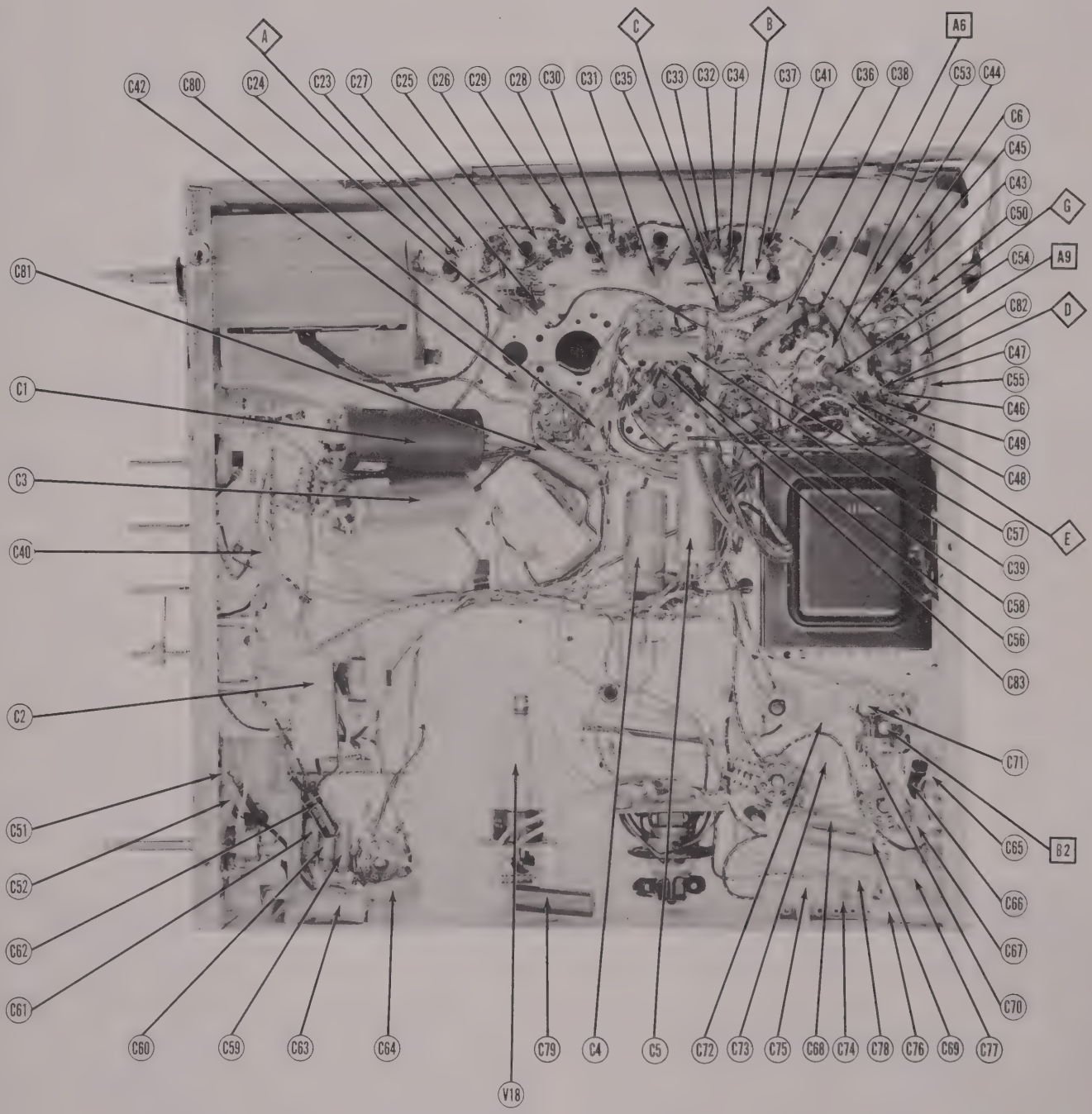
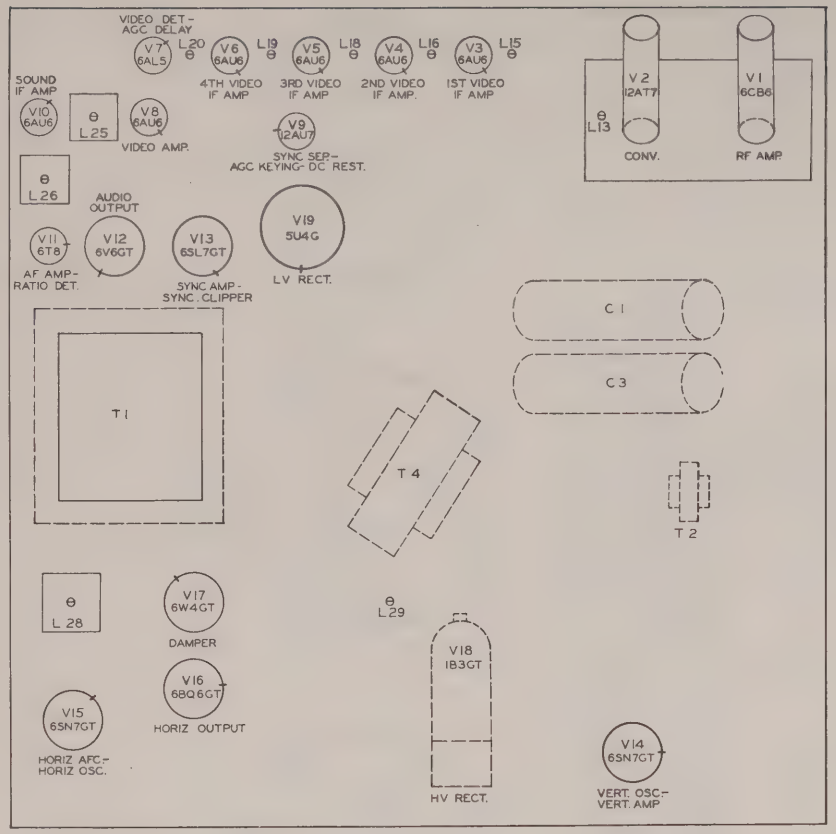


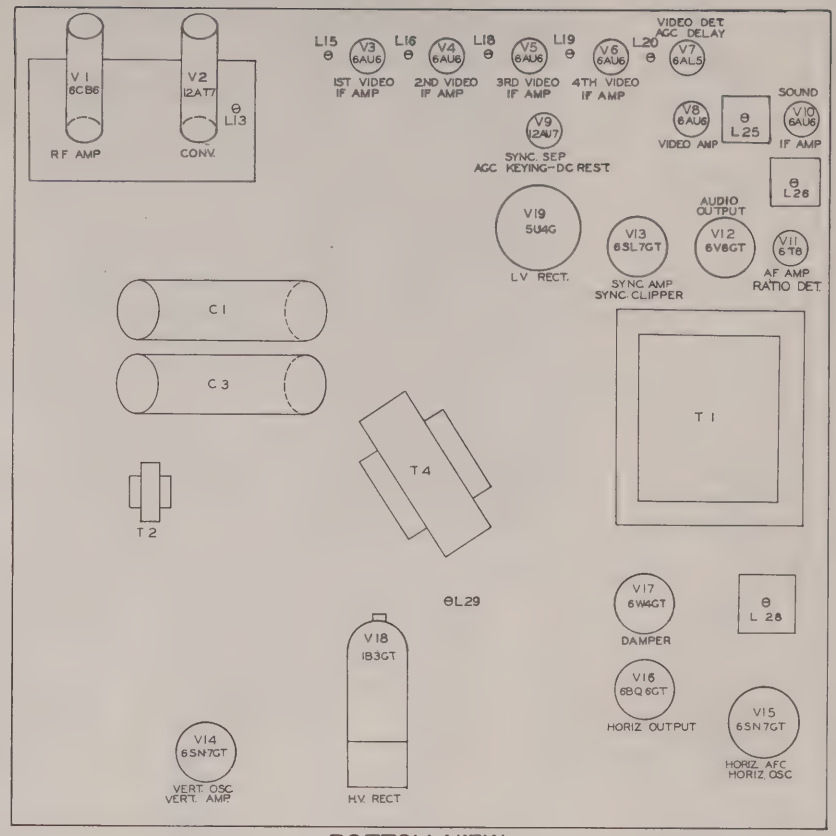
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

CROSLEY MODELS
11-441MU, 11-461WU, 11-471BU

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Set the tuner 4 or 5 turns clockwise from the low frequency end, at a position which causes no spurious responses.
Connect a clip lead from the can, (negative terminal), of C1 to the unground lead of R39.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	1000MMF.	High side to Point A. Low side to chassis.	24MC (unmod.)	See instructions above.	DC Probe to Point B. Common to Point C.	A1	Adjust for maximum deflection. Attenuate signal gen. to maintain 2 volt reading.
2.	"	"	22.2MC	"	"	A2	"
3.	"	"	26.55MC	"	"	A3	"
4.	"	"	22.9MC	"	"	A4	"
5.	Direct	Across antenna terminals (Low side to grounded lead)	25.5MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Across antenna terminals (low side to grounded lead).	25MC (10MC SWP)	21.9MC 22.9MC 25.5MC 26.4MC	See instructions above	Vert. Amp. thru 22KΩ to Point B. Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point D to Point E. The junction of these two resistors is alignment Point G as shown on the schematic.
During sound IF alignment the common lead of the VTVM is connected to approximately 150 volts with respect to chassis.
Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	1000MMF.	High side to pin 1, (Grid) of 6AU6, (V8). Low side to chassis.	4.5MC (400% Mod.)	Any channel not used locally.	DC Probe to Point D. Common to Point E.	A6, A7, A8	Adjust for maximum deflection.
8.	"	"	"	"	DC Probe to Point F. Common to Point G.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	1000MMF.	High side to pin 1, (Grid) of 6AU6, (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any channel not used locally.	Vert. Amp. to Point D. Low side to chassis.	A6, A7, A8	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
8.	"	"	"	"	"	Vert. Amp. to Point E. Low side to chassis.	A9	Reconnect capacitor C6. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

THE RF PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

AGC NEUTRALIZING CAPACITOR ADJUSTMENTS

Adjust C83 (transmission line) by altering the wire spacing in the center of the wires. Adjust with no signal input to the receiver.
Remove one of the video IF tubes from its socket and set the contrast control to fully counter-clockwise.
Connect a VTVM between pin 8 of V9 and chassis.
Neutralization is accomplished when no voltage change occurs when a .1MFD. capacitor is intermittently connected between pin 7, (Grid), of V9 and chassis

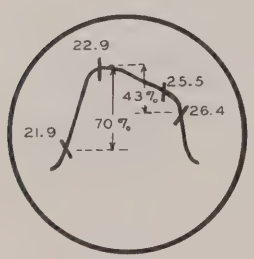


FIG. 1

FIG. 2

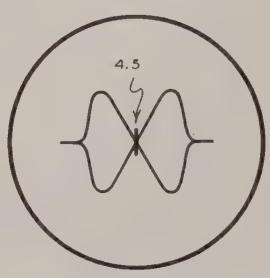
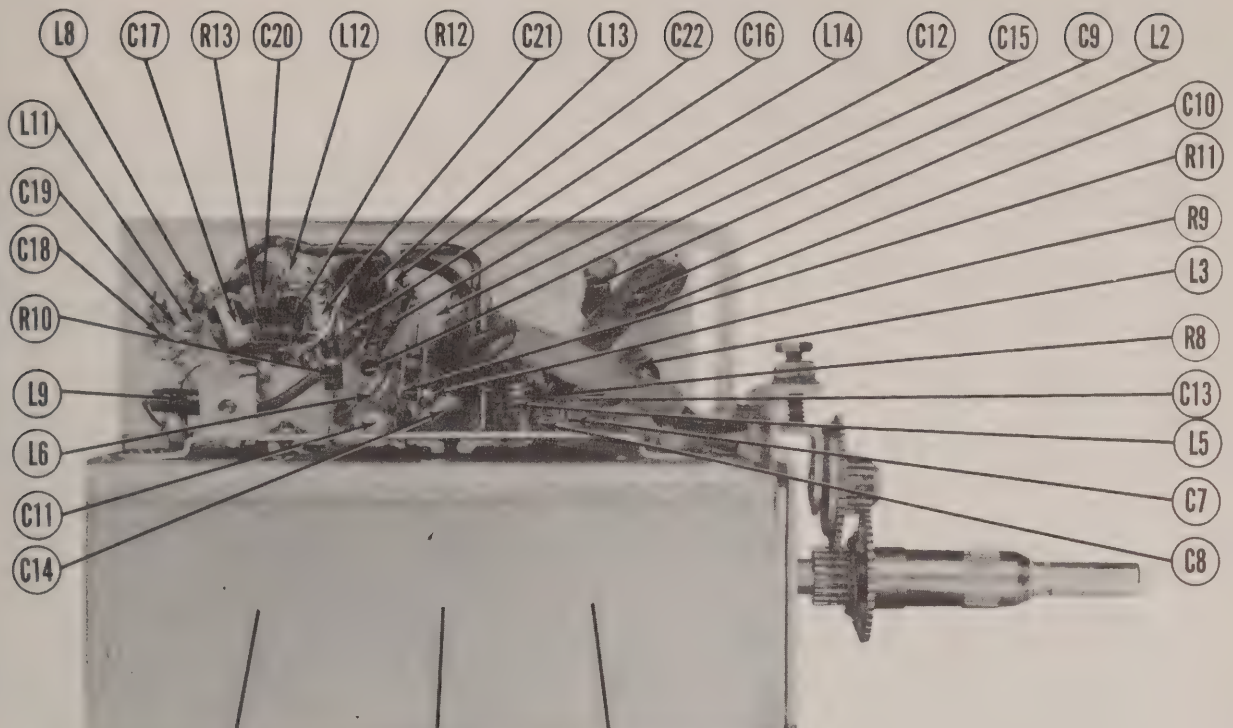


FIG. 3



RF TUNER

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs and one channel pointer.
2. Remove four 1/4" hex head screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Remove five 7/16" hex head bolts from chassis. Remove chassis.
6. Remove four 1/4" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.3VDC	.8VDC	0V	6.3VAC	125VDC	90VDC	0V		
V 2	12AT7	125VDC	-2.8VDC	0V	0V	0V	125VDC	§-3.5VDC	0V	6.3VAC
V 3	6AU6	-.9VDC	0V	6.3VAC	0V	125VDC	125VDC	0V		
V 4	6AU6	-.9VDC	0V	6.3VAC	0V	125VDC	125VDC	0V		
V 5	6AU6	0V	0V	6.3VAC	0V	120VDC	120VDC	.9VDC		
V 6	6AG5	0V	.9VDC	0V	6.3VAC	120VDC	120VDC	.9VDC		
V 7	6AL5	0V	-.7VDC	6.3VAC	0V	-.7VDC	0V	-.1VDC		
V 8	6AU6	-.7VDC	0V	6.3VAC	0V	125VDC	245VDC	3.3VDC		
V 9	12AU7	1.1VDC	0V	.3VDC	6.3VAC	6.3VAC	-14VDC	-.7VDC	0V	0V
V 10	6AU6	¶0V	¶0V	¶0V	¶6.3VAC	56VDC	56VDC	¶.8VDC		
V 11	6T8	¶-.3VDC	¶-.5VDC	¶-.3VDC	¶0V	¶6.3VAC	¶-.3VDC	¶0V	¶0V	95VDC
V 12	6V6GT	0V	¶6.3VAC	¶170VDC	¶185VDC	¶-4.3VDC	0V	¶0V	¶0V	
V 13	6SL7GT	¶-1VDC	¶170VDC	¶0V	¶0V	¶200VDC	¶2.6VDC	¶6.3VAC	¶0V	
V 14	6SN7GT	§-40VDC §-49VDC	70VDC 150VDC	0V	§0V §-8VDC	350VDC	8VDC 15VDC	6.3VAC	0V	
V 15	6SN7GT	§-68VDC §-76VDC	230VDC	0V	§-12VDC §-24VDC	130VDC 210VDC	-9.6VDC 6.3VDC	6.3VAC	0V	
V 16	6BQ6GT	0V	6.3VAC	0V	150VDC	-24VDC	-24VDC	0V	0V	Top Cap *
V 17	6W4GT	0V	230VDC	390VDC	0V	230VDC	0V	¶6.3VAC	¶0V	
V 18	1B3GT	* DO NOT MEASURE								Top Cap *
V 19	5U4G	0V	370VDC	6.3VAC	335VAC	0V	335VAC	0V	370VDC	
V 20	12LP4A	0V	.4VDC	PIN 10 215VDC	PIN 11 19VDC 53VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 7.5K.V.			

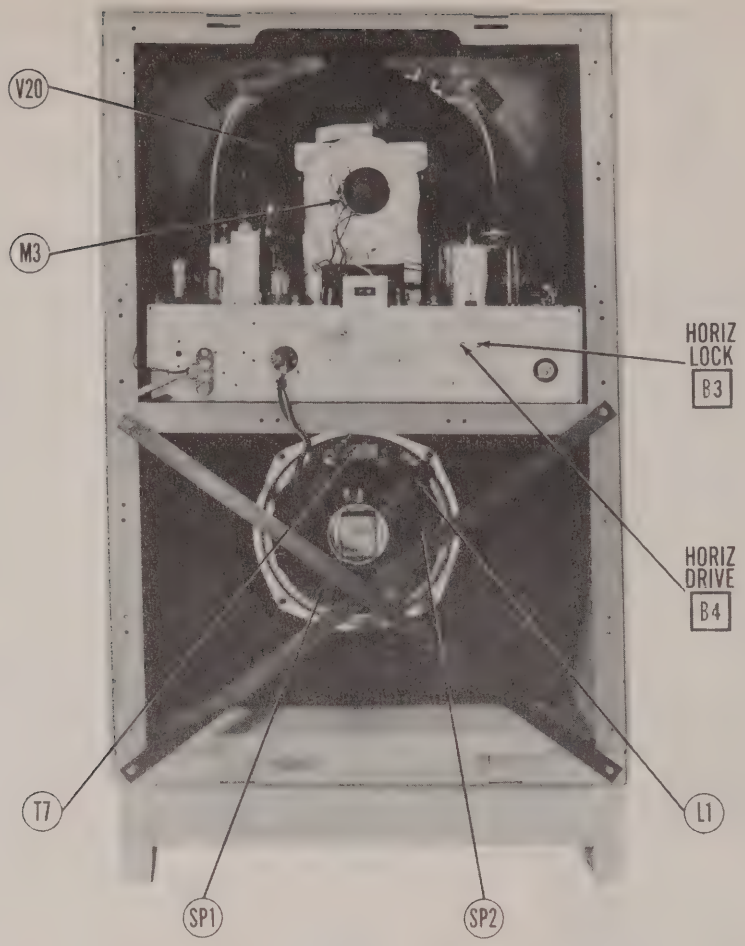
ALL MEASUREMENTS TAKNE WITH PICTURE TUBE REMOVED
¶ MEASURED FROM PIN 8 OF V12
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	340KΩ	82Ω	0Ω	.1Ω	¶265Ω	¶15KΩ	0Ω		
V 2	12AT7	¶200Ω	1Meg	0Ω	0Ω	0Ω	¶200Ω	15KΩ	0Ω	.1Ω
V 3	6AU6	295KΩ	0Ω	.1Ω	0Ω	¶200Ω	¶200Ω	68Ω		
V 4	6AU6	275KΩ	0Ω	.1Ω	0Ω	¶300Ω	¶300Ω	68Ω		
V 5	6AU6	8.2KΩ	0Ω	.1Ω	0Ω	¶400Ω	¶400Ω	100Ω		
V 6	6AG5	.5Ω	100Ω	0Ω	.1Ω	¶500Ω	¶500Ω	100Ω		
V 7	6AL5	0Ω	122Ω	.1Ω	0Ω	4.7KΩ	0Ω	350KΩ		
V 8	6AU6	4.7KΩ	0Ω	.1Ω	0Ω	¶4.7KΩ	†82KΩ	1KΩ		
V 9	12AU7	47KΩ	0Ω	300KΩ	.1Ω	.1Ω	340KΩ	100KΩ	0Ω	0Ω
V 10	6AU6	¶2.4Ω	¶0Ω	¶0Ω	¶.1Ω	†47KΩ	†47KΩ	¶220Ω		
V 11	6T8	Inf.	¶18KΩ	Inf.	¶0Ω	¶.1Ω	¶0Ω	¶0Ω	¶10Meg	†100KΩ
V 12	6V6GT	Inf.	¶.1Ω	†1KΩ	†640Ω	¶100KΩ	Inf.	¶0Ω	¶0Ω	
V 13	6SL7GT	¶1Meg	†18KΩ	¶0Ω	¶3.3Meg	†250Ω	¶6.8KΩ	¶.1Ω	¶0Ω	
V 14	6SN7GT	2.7Meg 1.2Meg	#3.5Meg #1Meg	0Ω	2.2Meg	†2KΩ	5.5KΩ 560Ω	.1Ω	0Ω	
V 15	6SN7GT	250KΩ	#70KΩ	0Ω	1.1Meg	#60KΩ	300KΩ	.1Ω	0Ω	
V 16	6BQ6GT	Inf.	.1Ω	Inf.	†18KΩ	1Meg	1Meg	0Ω	0Ω	Top Cap #65Ω
V 17	6W4GT	Inf.	#70KΩ	†18KΩ	Inf.	†1.5KΩ	Inf.	¶.1Ω	¶0Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #220Ω
V 19	5U4G	Inf.	25KΩ	.1Ω	58Ω	Inf.	55Ω	Inf.	25KΩ	
V 20	12LP4A	0Ω	250KΩ	PIN 10 †12KΩ	PIN 11 †25KΩ †20KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
¶ MEASURED FROM PIN 8 OF V12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station and adjust the contrast control for a normal picture. Turn the horizontal hold control to the mid-position of its range. Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally. Connect the vertical input lead of an oscilloscope through a 10MMF. capacitor to terminal 5 of L28. Adjust the horizontal waveform slug, (B2), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 4. If necessary during adjustment of B2, adjust B1 to keep the picture synchronized. Turn the horizontal hold control to fully counter-clockwise. The picture should remain in synchronization. Adjust B1 counter-clockwise until the picture just falls out of synchronization and then clockwise carefully until one vertical or diagonal line shows in the picture. Turn the hold control to fully counter-clockwise, picture should remain in synchronization. Momentarily remove the signal by tuning to another channel and back again. If more than seven sloping bars are present, adjust the horizontal lock trimmer, (B3), slightly counter-clockwise. If less than 5 bars are present adjust B3 slightly clockwise, Repeat the adjustment of B1, and B3 until 5 to 7 bars are present after signal removal with the hold control at fully counter-clockwise. Check the pull-in range, the picture should pull into synchronization over at least 120°.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive trimmer, (B4), fully out, (counter-clockwise). If bright vertical lines appear in the raster, turn B4 clockwise just enough to remove them, if not leave the trimmer at minimum capacity. Adjust the width slug, (B5), until the picture is slightly wider than necessary to fill the mask horizontally.

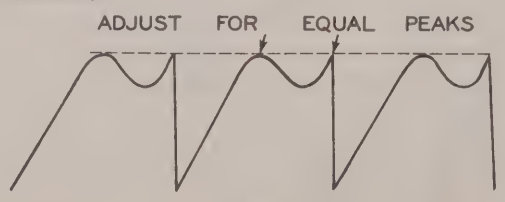
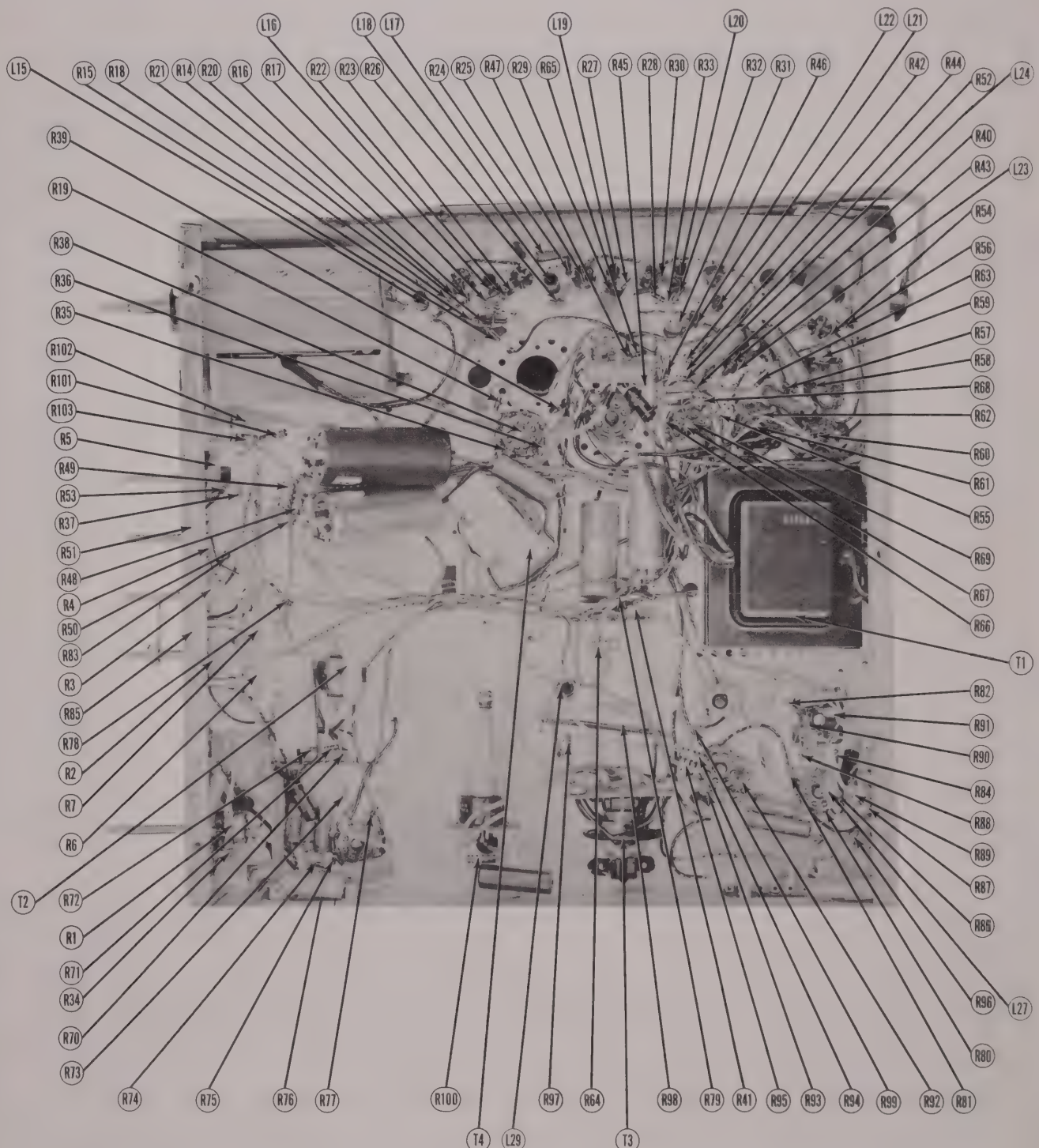


FIG. 4



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: CROSLEY PART No	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp	6AU6	6AU6	7BK	
V4A	3rd. Video IF Amp	6AU6	6AU6	7BK	
B	3rd. Video IF Amp	6AG5	6AG5	7BD	
C	3rd. Video IF Amp	6BC5	6BC5	7BD	
V5A	4th. Video IF Amp	6AG5	6AG5	7BD	
B	4th. Video IF Amp.	6BC5	6BC5	7BD	
V6	Video Detector - AGC Delay	6AL5	6AL5	6BT	
V7	Video Amplifier	6AU6	6AU6	7CM	
V8	AGC Keying, Sync. Sep., DC Rest	12AU7	12AU7	9A	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6V6GT	6V6GT	7AL	
V13	Sync. Clipper - Sync. Amplifier	6SL7GT	6SL7GT	8BD	
V14	Vert. Oscillator - Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V15	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: CROSLEY PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V20	12LP4A	12LP4A	12LP4A ①	12D	① Use single magnet ion trap

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C A	40	475	B-146633	AFH2-72		UP4450		TVL-2830	▲ Filter
B	40	475							▲ Filter
C2	500	10	B-149038	PRSI2/500		BRH125A		TVA-1132	Bias Filter
C3A	40	475	B-149061	AFH3-192		UPT303		TVL-2830	▲ Filter
B	40	250						TVA-1207	■ Decoupling
C	100	25							▲ Vert. Amp. Cathode
C4	40	300	B-146725	PRS450/40		BR4035		TVA-1611	Audio Output Dec.
C5A	10	475	B-149105	AFH3-160		UPT318		TVL-3835	▲ Vert. Osc. Dec.
B	.0	475							▲ Vert. Amp. Dec.
C	4	350							Video Amp. Screen
C6	10	25	B-149211	PRS25/10		BR102A		TVA-1204	Stabilizing Cap.
C7	27		C-137727-49		TCZ-27		NP0K-270		RF Coupling
C8	27		C-137727-49		TCZ-27		NP0K-270		Fixed Trimmer
C9	1500		C-137727-113	SII500		GP2L-152	5HK-D15		AGC Filter
C10	.8-5.5		B-148895-1		829-6				Variable Trimmer
C11	1500		C-137727-113	SII500		GP2L-152	5HK-D15		RF Amp. Plate
C12	1500		C-137727-113	SII500		GP2L-152	5HK-D15		RF Amp. Screen
C13	5		W-137389-6	SI5NP0	TCZ-4.7		NP0K-050		RF Amp. Cathode
C14	1500		C-137727-113	SII500	D6-152		GP2L-152	5HK-D15	RF Amp. Fil.
C15	.8-5.5		B-148895-1		829-6				Variable Trimmer
C16	6		C-137727-106				NP0K-060		RF Coupling
C17	6		C-137727-106				NP0K-060		Fixed Trimmer
C18	.8-5.5		B-148895-1		829-6				Variable Trimmer
C19	6		C-137727-106				NP0K-060		Osc. Grid Cap.
C20	1		W-137398-2		TCZ-1		NP0K-010		Osc. Coupling
C21	15		C-137727-41		TCN-15		N750K-150	5TCU-Q15	Fixed Trimmer
C22	1500		C-137727-113	SII500	D6-152		GP2L-152	5HK-D15	RF Bypass
C23	100		C-137727-108	SII00	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C24A	4000		C-144675-6	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402	1D5D4			RF Bypass
C25	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec.
C26	100		C-137727-108	SII00	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C27	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C28	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C29	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Fil.
C30	100		C-137727-108	SII00	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C31A	4000		C-144675-6	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	3rd. Video IF Dec.
B	4000				D6-402	1D5D4			3rd. Video IF Cathode
C32	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Dec.
C33	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Cathode
C34	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C35	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C36	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.
C37	5		C-137727-103	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C38	.05	400	39001-17	P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C39	.1	400	39001-19	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C40	.1	400	39001-19	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C41	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C42	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Decoupling
C43	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C44	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C45	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C46	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C47	2.2		W-137398-4		TCZ-2.2		NP0K-2R2		Balancing Cap.
C48	5000		C-144675-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C49	1000		C-137727-110	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Diode Load Cap.
C50	.005	600	39001-11	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	De-emphasis

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	.01	400	39001-13	P488-1	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C52	.01	400	39001-13	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C53	.0002	600	39001-73	P685-00025	D6 251		GP2K 251	6TM-T25	AF Amp. Plate
C54	.02	400	39001-80	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C55	.005	400	39001-11	P688-005	D6 502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C56	.01	400	39477-41	P488-01	D6 103	PTE4S1	GP2-333-103	4TM-S1	Sync. Coupling
C57	120	500	B-137498-17	1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	Sync. Coupling
C58	390	500	B 147398-28	1469-0004		5R5T4		MS-34	Sync. Amp. Cathode
C59	.002	600	39001-74	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net. †
C60	.005	600	39001-11	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net. †
C61	.005	600	39001 11	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net. †
C62	.0047	600	39478 39	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM D47	Vert. Osc. Grid
C63	.1	400	C-146434-3	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Discharge
C64	.1	400	3900 1-19	P488 1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C65	120	500	B-137498-17	1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	Horiz. Sync. Coupling
C66	.0022	600	39477-37	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Horiz. Sync. Coupling
C67	.25	200	39001-87	P488-25		GT4P25		2TM-P25	AFC Filter
C68	.05	200	39001-80	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C69	.05	400	39001 17	P488-05	DF-503	PTE4S5		4TM-S5	AFC Plate
C70	200	1000	B 137498-47						Horiz. Osc. Grid
C71	.01	400	C-148813-1	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Trimmer
C72	1500	500	B-137498-58	1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	Horiz. Discharge
C73	500	500	B-137498-3	1468-0005	D6-501	5W5T5	GP2K-501	1FM 35	Horiz. Sweep Coupling
C74	.05	200	39001-17	P288-05	DF-503	PTE4S2		2TM-S5	Horiz. Output Screen
C75	.2	200	B-148317-4	P488-22		GT4P2		2TM-P22	Horiz. Sweep Coupling
C76	.1	200	39001-19	P288-1	DF-104	PTE4P1		2TM P1	Decoupling
C77	.5	200	B-148317-2	P288-5		GT2P5		2TM-P5	Damper Filter
C78	.5	200	B-148317-2	P288-5		GT2P5		2TM-P5	Decoupling
C79	.00047	1000	W-147994	10084-0005		PTE10T5		TVM-351	HV Filter
C80	.015	200	39001-14	P288-015					AGC Filter
C81	.25	200	39001-87	P488-25		GT2P25		2TM-P25	AGC Filter
C82	5000		C-144G75-2	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C83	3		AW-148980						AGC Neutralizing

† Some models combine C59, C60, C61, R70, R71, R72 in one unit. (Mfgrs. Part # W-149978)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	C-148954 #	Concentrikit B13-137 ϕ	RTV-24		Volume Control - Front
B	1000Ω	½		B11-106 ϕ			Contrast Control - Rear
C	Shaft end			E-187 ϕ			Attach per instructions in Concentrikit
D	Switch			76-1 ϕ			Attach per instructions in Concentrikit
R2A	1.5Meg	½	B-148952	Q11-138	AG-83-S	AN-75	Vert. Hold Control - See Note 1
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	B-148953	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R3A per instructions
R4A	40KΩ	½	B-148966	Q11-123	AG-43-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A per instructions
R5	650Ω	2	B-148951		43-750		Focus Control - Wire Wound
R6A	2.5Meg	½	B-148964	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	5000Ω	½	B-148965	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R7A per instructions

Some models use Control having Part # C-148054.
ϕ Additional parts to be used with Concentrikit.
Note 1 This unit has a stop arm which is attached to the shaft. When replacing, attach stop to prevent use of more than 750KΩ

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	82Ω		39374-12	BTS-82	RF Amp. Cathode
R9	15KΩ	5%	39374-39		RF Amp. Screen
R10	5600Ω		39374-34	BTS-5600	RF Amp. Plate
R11	68Ω		39374-11		Parasitic Suppressor
R12	1Meg		39374-61		Mixer Grid
R13	15KΩ	5%	39374-39		Osc. Grid
R14	100Ω	20%	39373-14	BTS-100	Decoupling
R15	100Ω	20%	39373-14	BTS-100	Decoupling
R16	100Ω	20%	39373-14	BTS-100	Decoupling
R17	100Ω	20%	39373-14	BTS-100	Decoupling
R18	10KΩ	20%	39373-54	BTS-10K	AGC Network
R19	1000Ω	20%	39373-33	BTS-1000	AGC Network
R20	15KΩ	5%	39375-77		1st. Video IF Amp. Grid
R21	68Ω		39374-11		1st. Video IF Amp. Cathode
R22	6800Ω	5%	39375-69		2nd. Video IF Amp. Grid
R23	68Ω		39374-11		2nd. Video IF Amp. Cathode
R24	8200Ω	5%	39375-71		3rd. Video IF Amp. Grid
R25	100Ω		39374-13	BTS-100	3rd. Video IF Amp. Cathode
R26	100Ω	20%	39373-14	BTS-100	Decoupling
R27	6800Ω	5%	39375-69		4th. Video IF Transformer Shunt
R28	100Ω		39374-13	BTS-100	4th. Video IF Amp. Cathode
R29	100Ω	20%	39373-14	BTS-100	4th. Video IF Amp. Decoupling
R30	8200Ω	5%	39375-71		5th. Video IF Transformer Shunt
R31	4700Ω	5%	39375-65	BTS-4700-5%	Video Det. Diode Load
R32	100Ω	20%	39373-14	BTS-100	Bias Network
R33	100KΩ		39374-49	BTS-100K	Keyed AGC Grid
R34	47KΩ		39374-133	BTS-47K	Keyed AGC Cathode
R35	8200Ω		39374-36	BTS-8200	AGC Network
R36	180KΩ	5%	39375-103	BTS-180K-5%	AGC Network
R37	820KΩ	5%	39375-119	BTS-820K-5%	AGC Delay Network
R38	270KΩ	5%	39375-107	BTS-270K-5%	AGC Network
R39	270KΩ	5%	39375-107	BTS-270K-5%	AGC Network - See Note 2
R40	22Ω		39374-5		Video Amp. Cathode
R41	82K†	2	39374-224	BTB-82K	Video Amp. Screen
R42	4700Ω	5%	39375-213	BTA 4700-5%	Video Amp. Plate
R43	6800Ω		39374-35	BTS-6800	Video Peaking Coil Shunt
R44	3300Ω		39374-31	BTS-3300	Isolation
R45	150KΩ		39374-51	BTS-150K	DC Restorer Diode Load
R46	150KΩ		39374-51	BTS-150K	DC Restorer Diode Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: IRC PART No	IDENTIFICATION CODES
R47	47KΩ	½	39374-45	BTS 47K	Voltage Divider
R48	39KΩ	2	39374-220	BTB-39K	Voltage Divider
R49	33KΩ	2	39374-219	BTB-33K	Voltage Divider
R50	12KΩ	2	39374-214	BTB-12K	Voltage Divider
R51	4700Ω	1	39374-121	BTA-4750	Brightness Control Shunt
R52	100Ω	½	39374-49	BTS 100K	Picture Tube Grid
R53	1800Ω	½	39374-28	BTS-1800	Picture Tube Cathode
R54	220Ω	½	39374-17	BTS-220	Sound IF Amp. Cathode
R55	47KΩ	1	39374-133	BTA-47K	Sound IF Amp. Decoupling
R56	10Ω	½	39373-1		Hum Balancing
R57	18KΩ	5% ½	39375-79	BTB-18K-5%	Ratio Det. Diode Load
R58	22Ω	½	39374-5		Balancing
R59	27KΩ	½	39374-42	BTS-27K	De-emphasis
R60	10Meg	20% ½	39373-107	BTS-10Meg	AF Amp. Grid
R61	100KΩ	½	39374-49	BTS-100K	AF Amp. Plate
R62	100KΩ	5% ½	39375-97	BTS-100K-5%	Output Grid
R63	2.2Meg	5% ½	39375-129	BTS-2.2Meg-5%	Voltage Divider
R64	390Ω	2	39374-198	BTB-390	Decoupling
R65	820KΩ	½	39374-60	BTS 820K	Sync. Sep. Plate
R66	1Meg	20% ½	39373-92	BTS 1Meg	Sync. Clipper Grid
R67	18KΩ	½	39374-40	BTS-18KΩ	Sync. Clipper Plate
R68	3.3Meg	20% ½	39373-100	BTS-3.3Meg	Sync. Amp. Grid
R69	6800Ω	½	39374-35	BTS-6800	Sync. Amp. Cathode
R70	2.2KΩ	½	39374-41	BTS-22K	Integrator } See Note 3
R71	8200Ω	½	39374-36	BTS 8200	Integrator }
R72	8200Ω	½	39374-36	BTS 8200	Integrator }
R73	1.2Meg	1	39374-63	BTS-1.2Meg	Vert. Osc. Grid
R74	1Meg	½	39374-91	BTS-1Meg	Vert. Osc. Plate
R75	10KΩ	20% ½	39374-37	BTS-10K	Vert. Osc. Transformer Shunt
R76	3300Ω	½	39374-31	BTS-3300	Vert. Peaking
R77	2.2Meg	½	39374-69	BTS-2.2Meg	Vert. Amp. Grid
R78	560Ω	½	39374-22	BTS-560	Vert. Amp. Cathode
R79	1000Ω	20% ½	39373-33	BTS-1000	Vert. Amp. Decoupling
R80	820KΩ	½	39374-60	BTS-820K	Horiz. AFC Grid
R81	150KΩ	½	39374-51	BTS-150K	Horiz. AFC Cathode
R82	150KΩ	½	39374-51	BTS-150K	Horiz. AFC Cathode
R83	100KΩ	1	39374-137	BTA-100K	Horiz. AFC Plate
R84	8200Ω	½	39374-36	BTS-8200	Horiz. AFC Filter
R85	68KΩ	1	39374-135	BTA-68K	Voltage Divider
R86	2.7Meg	½	39374-71	BTS-2.7Meg	Voltage Divider
R87	150KΩ	½	39374-51	BTS-150K	Horiz. Feedback
R88	100KΩ	5% ½	39375-97	BTS-100K-5%	Horiz. Osc. Grid
R89	68KΩ	1	39374-135	BTA-68K	Horiz. Osc. Plate
R90	10KΩ	½	39374-37	BTS-10K	Horiz. Osc. Coil Shunt
R91	22KΩ	½	39374-41	BTS-22K	Horiz. Osc. Coil Shunt
R92	1500Ω	½	39374-27		Parasitic Suppressor
R93	1Meg	20% ½	39373-92	BTB-1Meg	Horiz. Output Grid
R94	39KΩ	2	39374-220	BTB-39K	Horiz. Output Screen
R95	33KΩ	2	39374-219	BTB-33K	Horiz. Output Screen
R96	2200Ω	½	39374-29	BTS-2200	Decoupling
R97	56KΩ	½	39374-46	BTS-56K	Vert. Osc. Decoupling
R98	1300Ω	15	B-149127	2D-1250	Damper Filter - Wire Wound
R99	18KΩ	½	39374-40	BTS 18K	Voltage Divider
R100	220KΩ	1	39374-141		HV Filter
R101	22Ω	1	39374-93	BW-1-22	Bias Network
R102	330Ω	2	39374-195	BTB-330	Focus Coil Shunt
R103	330Ω	2	39374-195	BTB-330	Focus Coil Shunt

Note 2 Some models use 47KΩ resistor in this application.
Note 3 Items R70, R71, R72, C59, C60, and C61 are combined into one unit in some models. (Mfgrs. Part # W-149878)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No
T1	117VAC ③ 1.5A	680VCT .175ADC	5VAC ② 3A	② 2.7A SEC. 4 6.3VAC ② 5.2A	C-148975			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No	NOTES
T2	700Ω	180Ω	B146842-3	A-8111 ②	A-3000 ②	TBO-1 ②	Vert. Block Osc. Trans.
T3	115Ω Tap 65Ω	.8Ω Tap .4Ω SEC. 2 Tap 3.5Ω SEC. 3 0Ω	AC149146				Horiz. Output Trans.
T4	750Ω Tap 12Ω		B-149263	A-8112 ②	A-3036 ②	ISO 5 ②	Vert. Output Trans.
T5A	14Ω		AC-148887-6	DY-7	MDF-70		Horiz. Deflection Coils
B	18Ω						Vert. Deflection Coils
T6	250Ω		AB-148971				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	5KΩ	3.6Ω	360Ω	.7Ω	B-149476	A-3823	A-2930 ②	RO-9 ②	② Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CROSLEY PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.6Ω	138762-5	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9½"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.175A	49Ω	1 Henry	B149475	C-2326 ②	C-3196 ②	TR-4200②	② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CROSLEY PART No.		IRC PART No.	
L2	Ant. Shunt	.5Ω		B-148936-2		CLA	.82 Microhenry
L3	RF Choke	6.1Ω		B-148936-3		CL-1	8.2 Microhenries
L4	Ant. Coil	0Ω		W-149222			Part of L7 and L10
L5	Ant. End Inductor	0Ω		AW-149071			
L6	RF End Inductor	0Ω		AW-149070			
L7	RF Coil	0Ω		W-149222			Part of L4 and L10
L8	Coupling Choke	0Ω		AW-149086			
L9	Osc. Shunt	0Ω		AW-149062			
L10	Osc. Coil	0Ω		W-149222			Part of L4 and L7
L11	Osc. End Inductor	0Ω		AW-149069			
L12	Plate Choke	0Ω		AW-149072			
L13	Conv. Plate Coil	.5Ω		AW-149088			
L14	RF Choke	.1Ω		AW-419063			
L15	1st. Video IF	.3Ω		AW-146763			
L16	2nd. Video IF	.3Ω		AW-146582			
L17	Fil. Choke	0Ω		AW-146855			
L18	3rd. Video IF	.2Ω		AW-146583			
L19	4th. Video IF	.6Ω	.6Ω	AW-147974			
L20	5th. Video IF	.7Ω	.8Ω	AW-148983			
L21	Peaking	11Ω		AW-149357			Wound on 22KΩ resistor (orange dot) Blue dot
L22	Peaking	19Ω		AW-146889			
L23	Peaking	11Ω		AW-149242			Wound on 22KΩ resistor (white dot) Blue dot
L24	Peaking	19Ω		AW-146889			
L25	Sound IF	2.6Ω	2.4Ω	AC-146782			
L26	Ratio Det. Trans.	4.3Ω	.1Ω	C-146874			Tap .5Ω
L27	Feedback Coil	115Ω		AW-148440			
L28	Horiz. Osc.	130Ω	36Ω	AC-146698			
L29	Width Coil	2.8Ω		AW-148978			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CROSLEY PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	250A	W-144898-1		315.200		

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M2	RF Tuner	AW-149159	
M3	Ion Trap	B-146480	
B3, 4	Trimmer	B-132386-17	Dual Horiz, Lock and Horiz. Drive (10-160MMF)
	Knob	AW-148865	Off/On Contrast Models 11-441MU, 11-461WU
	Knob	AW-148866	Volume Models 11-441MU, 11-461WU
	Knob	AW-148867	Tuning Models 11-441MU, 11-461WU
	Knob	AW-149852	Off/On Contrast Models 11-471BU
	Knob	AW-149854	Volume Models 11-471BU
	Knob	AW-149853	Tuning Models 11-471BU
	Transmission Line	AW-148980	3 MMF.

FIRESTONE
MODELS 4-A-97, 4-A-98

FIRESTONE
MODELS 4-A-97, 4-A-98

TRADE NAME	Firestone, Models 4-A-97, 4-A-98
SUPPLIER	Firestone Tire and Rubber Co., Akron, Ohio
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .2 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	530-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer in a horizontal position parallel with top of chassis.
Set PHONO-RADIO switch to RADIO position.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use in insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400 ∿Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for maximum output.	"	A6	"

FOR SERVICE INFORMATION ON RECORD CHANGER SEE PHOTOFACT SET 107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-A-98

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	1003	PRS150/40-30-20		EDL33215C		TVL-3422	Filter
B	40	150						TVA-1413	Filter
C	20	150		PRS25/20					Decoupling
D	20	25							Output Cathode
C2	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Tuning Cap. Isolation
C3	.1	200	804	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C4A	100		811 ♦	SI100	♦PC-50	5W5T1	GP1K-101	♦100C1	Diode RF Filter
B	100			SI100		5W5T1	GP1K-101		Diode RF Filter
C5	5000		824	SI5000	D6-502	1D5D5	GP2-333-502	5HK-D5	Audio Coupling ‡
C6	250		817	SI250	D6-251	5W5T25	GP2K-251	5GA-T22	AF Amp. Plate
C7	10000		†814	SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	Audio Coupling
C8	.01	400	825	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C9	5000		824	SI5000	D6-502	1D5D5	GP2-333-502	5HK-D5	Output Plate
C10	.05	400	803A	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C11	.1	200	804	P288-1	DF-104	PTE4P1		2TM-P1	Line Isolation

♦ Items C4A, C4B, R5 are combined into one unit.
† Items C7, R8 are combined into one unit.
‡ Some models use .01MFD and 5Meg resistor R7 in one unit (Mfgrs. Part No. 813).

CONTROLS

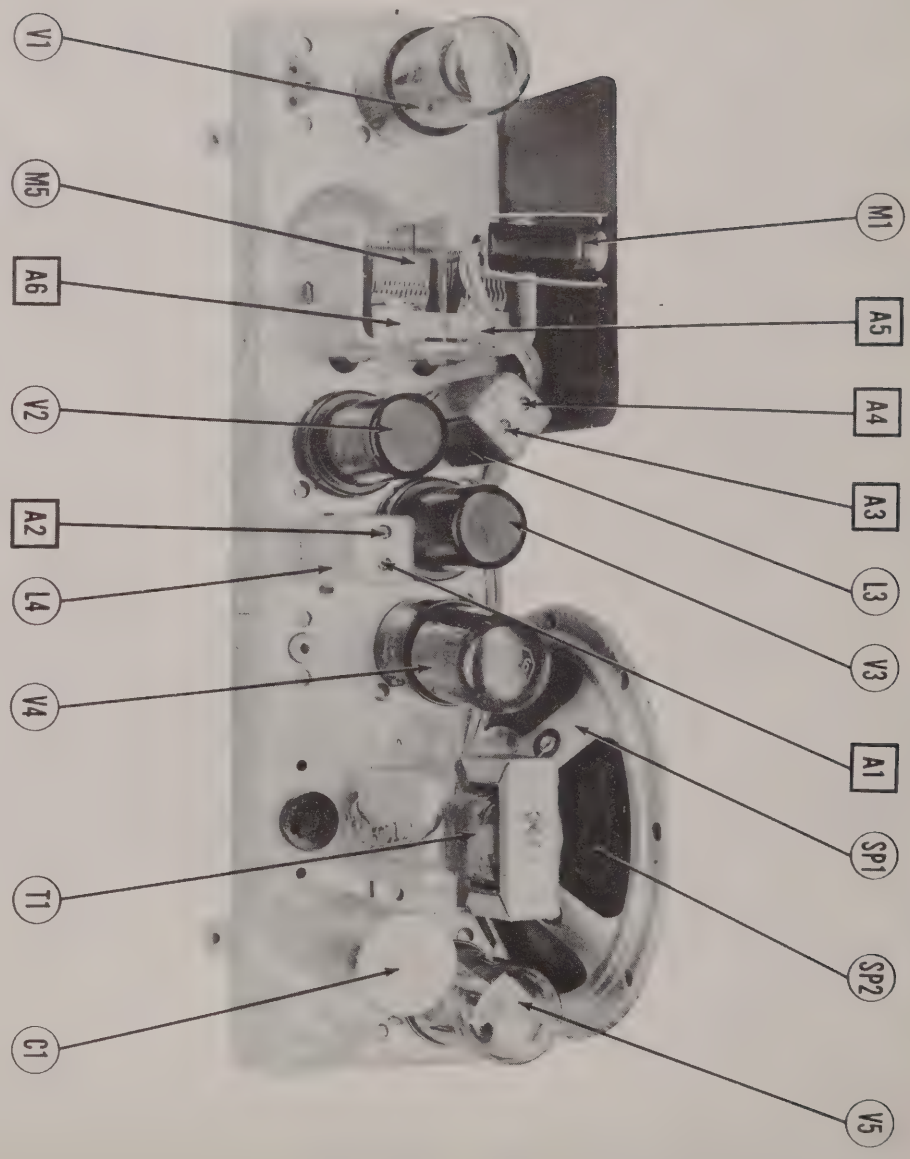
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	401	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A Per Instructions
R2A	500KΩ	½	408	Q11-133	AG-58-S	B-59	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	517	BTS-22K	Osc. Grid
R4	2.2Meg	½	615	BTS-2.2Meg	AVC Network
R5	50KΩ	½	*811	BTS-47K	Diode Filter
R6	47Ω	½	520	BW-½-47	AF Cathode
R7	5Meg	½		BTS-4.7Meg	AF Grid
R8	100KΩ	½	†814A	BTS-100K	AF Plate
R9	560KΩ	½	502	BTS-560K	Output Grid
R10	150Ω	½	505	BTS-150Ω	Output Cathode
R11	1Meg	½	516	BTS-1Meg	Feedback
R12	560KΩ	½	615	BTS-560K	Tone Comp.
R13	50Ω	½	534		Rectifier Ballast
R14	1000Ω	1	607	BTA-1000	Filter
R15	270Ω	1	622	BTA-270	Filter

* Items R5, C5A and C5B are combined into one unit. See C4 for part listings.
† Items R7 and R8 are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3000Ω	4Ω	200Ω	.5Ω	Part of SP1	A-3876 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4Ω	2607	ST-105 ②④ Mod. P5-X	5A07 ② ③	② Remount Output Transformer. ③ Use universal Mounting Bracket provided ④ Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	FIRESTONE PART No.		
L1	Loop Ant.	1.7Ω		1512A		
L2	Osc. Coil	5.9Ω				Tap at 1Ω
L3	1st IF	14Ω	14Ω	1402		
L3	2nd IF	14Ω	14Ω	1402		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M1	Bayonet	6-8	.15	Brown			Type number 47.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	FIRESTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	2534	AC-AG-J	A-AG	W26B	A66U	33	O-2 or S-2	

ASTATIC, SHURE, AND ELECTRO- VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

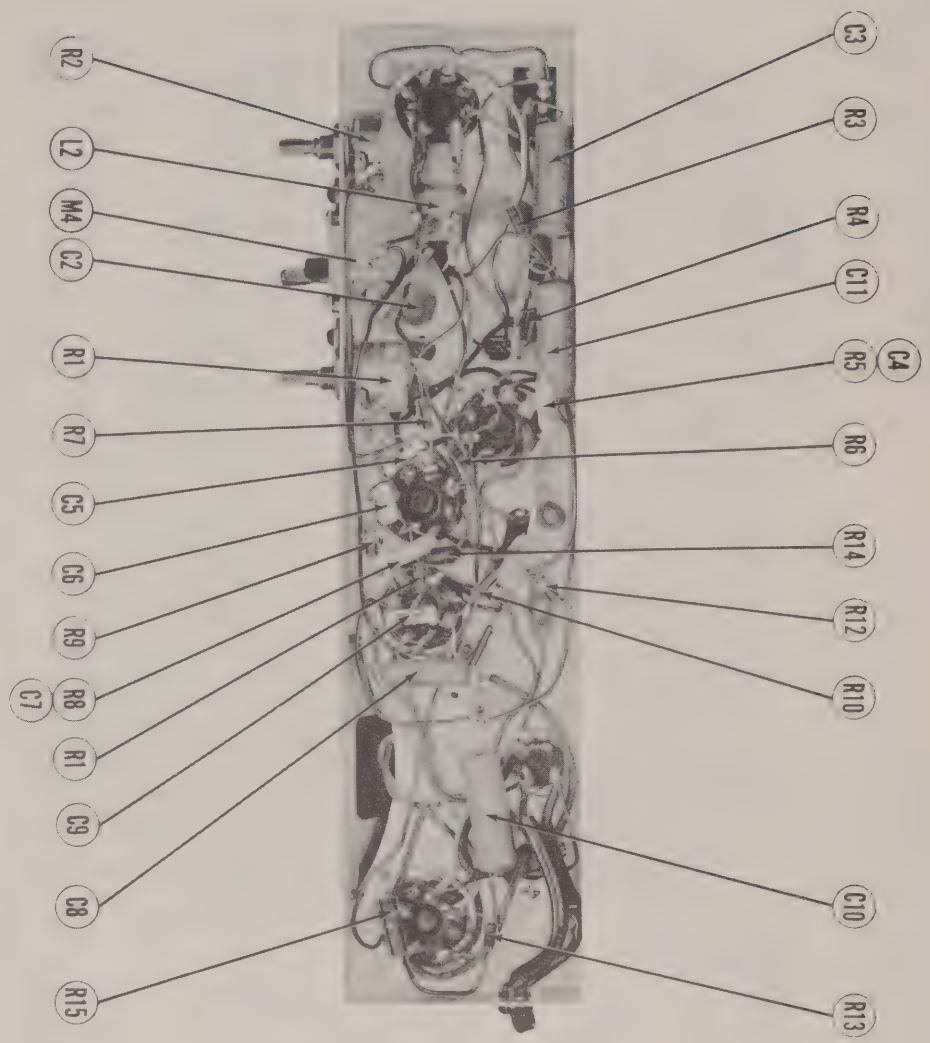
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	FIRESTONE PART No.	WALCO PART No.	
M3	2541	W-20AGA W-21AGS	Alloy Sapphire

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M4	Switch	1892A	Radio-Phono
M5	2 Gang Var. Cap.	1004A	(25-392MMF, 34-212MMF)
	Dial	1722B	
	Dial Pointer	1736A	
	Cabinet	2108	Model 4-A-98
	Cabinet	2108A	Model 4-A-97

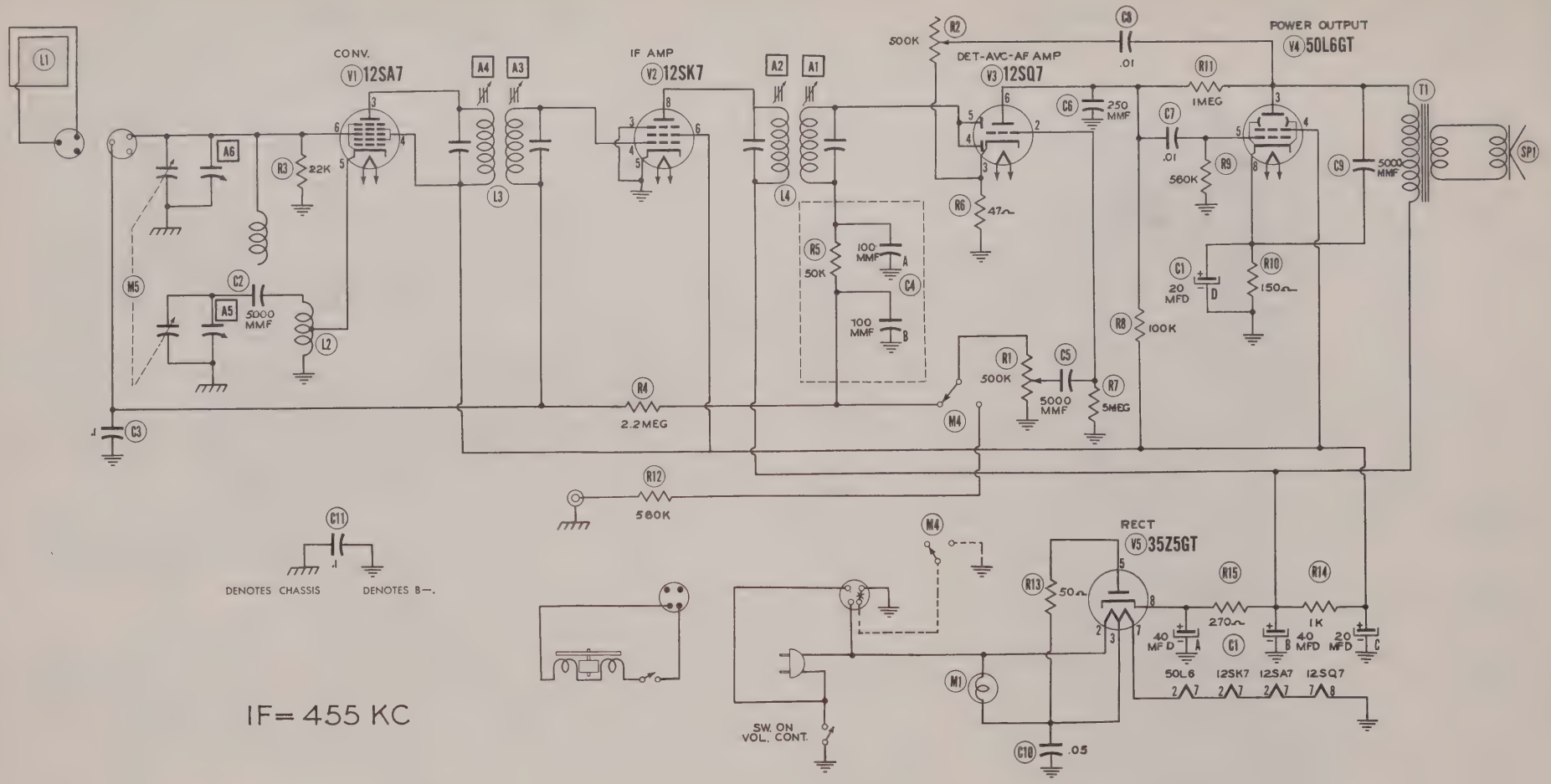
CHASSIS—BOTTOM VIEW



SET 147 FOLDER 5

FIRESTONE MODEL 4-A-98

FIRESTONE MODEL -4A-98



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V	24VAC	75VDC	75VDC	§-11VDC	0V	12VAC	-.4VDC
V 2	12SK7GT	0V	35VAC	0V	-.4VDC	0V	75VDC	24VAC	95VDC
V 3	12SQ7GT	0V	-.6VDC	0V	0V	-.7VDC	65VDC	12VAC	0V
V 4	50L6GT	0V	85VAC	85VDC	75VDC	0V	95VDC	35VAC	5.6VDC
V 5	35Z5GT	0V	117VAC	110VAC	0V	105VAC	95VDC	85VAC	105VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	Inf.	26Ω	†1.3KΩ	†1.3KΩ	22KΩ	1Ω	13Ω	2.7Meg
V 2	12SK7GT	Inf.	38Ω	0Ω	2.7Meg	0Ω	†1.3KΩ	26Ω	†270Ω
V 3	12SQ7GT	Inf.	5Meg	51Ω	Inf.	550KΩ	†100KΩ	13Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†450Ω	†1.3KΩ	56ΩK	†270Ω	38Ω	150Ω
V 5	35Z5GT	Inf.	120Ω	115Ω	Inf.	135Ω	†270Ω	90Ω	45KΩ

† MEASURED FROM PIN 8 OF V5.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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147-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC
MODELS 610, 611

GENERAL ELECTRIC
MODELS 610, 611

GENERAL ELECTRIC MODEL 610

TRADE NAME	General Electric, Models 610, 611
MANUFACTURER	General Electric Co., Electronics Dept. Electronics Park, Syracuse, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1T4 RF Amp. 1R5 Converter, 1T4 IF Amp., 1U5 Det-AVC-AF, 3V4 Power Output
POWER SUPPLY	105-115 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form.
RATING	.15 Amp. @ 117 Volts AC or 50MA @ 9 Volts DC and 19.5 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6, (grid) of 1R5, (V2). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to pin 6, (grid) of 1T4, (V1). Low side to B-.	1670KC	Tuning gang fully open.	"	A5	"
3.		Loop	1500KC	Tune for maximum output.	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
4.		Loop	580KC	"	"	A8	Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1T4	1T4	6AR	
V4	Det. -AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	RCE-095	AFH3-74		UPE4415		R1074	■ Filter
B	40	150				BRH2525A			▲ Filter
C	200	20							Fil. Filter
C2	100	6	RCE-131	PRS6/100		BRH601		TVA-1101	Fil. Filter
C3	5		RCW-3056	SI5NPO	TCZ-4.7		NPOK-050		RF Coupling
C4	47		RCW-1073	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Osc. Grid Cap.
C5	.05	200	UCC-045	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C6	.02	200	UCC-041	P488-02	DF-203	PTE4S2		2TM-S2	Decoupling
C7A	220			SI220	D6-221	5W5T25	GP2-333-221	5GA-T22	Diode RF Filter
B	.002			P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C	220		•RCW-3015	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate
D	.005			P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AF Amp. Screen
E	.005			P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C8	.003	400	UCC-037	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Output Plate
C9	.05	200	UCC-045	P288-05	DF-503	PTE4S5		2TM-S5	Fil. Bypass
C10	.03	600	UCC-042	P688-03		PTE6D3		6TM-S3	Line Filter
C11	.05	600	UCC-045	P688-05	DF-503	PTE6S5		6TM-S5	Line Isolation

• Items C7A, C7B, C7C, C7D, C7E are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500K	½	RRC-155		AG-60-Z		Volume Control
B	Shaft		Not Req.		RS-2 #		Attach to R1A Per Instructions
C	Switch		Not Req.		SWB-2		Attach to R1A Per Instructions

Fashion shaft to duplicate original.

RESISTORS

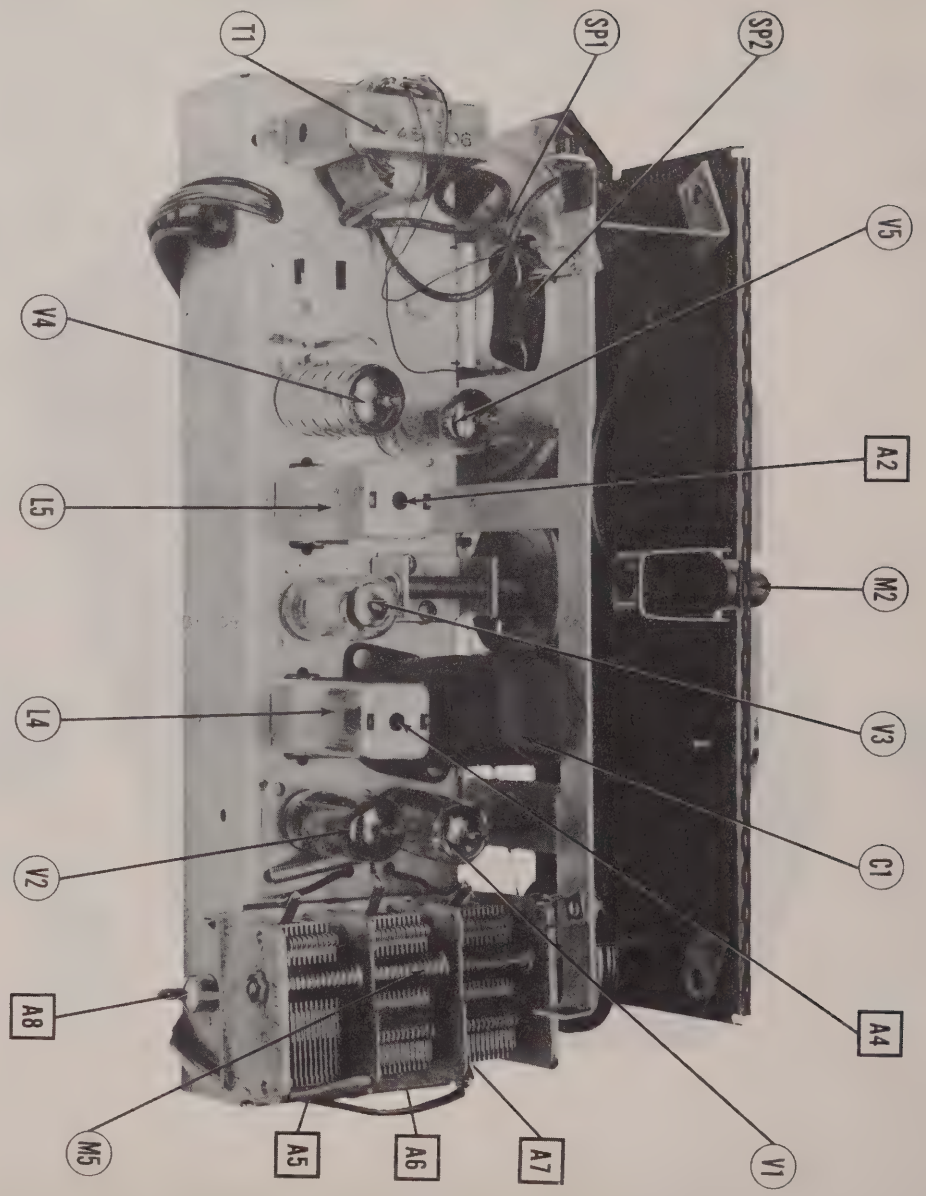
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	URD-097	BTS-100K	Osc. Grid
R3	5600Ω	½	URD-067	BTS-5600	Screen Dropping
R4	2.7Meg	½		BTS-2.7Meg	AVC Network- See Note
R5	2.2Meg	½	URD-129	BTS-2.2Meg	AVC Network
R6	4.7Meg	½	URD-137	BTS-4.7Meg	AF Amp. Grid
R7	2.7Meg	½		BTS-2.7Meg	AF Amp. Screen-See Note
R8	470KΩ	½	URD-113	BTS-470K	AF Amp. Plate
R9	2.2Meg	½	URD-129	BTS-2.2Meg	Output Grid
R10	2700Ω	1	URE-059	BTA-2700	Filter
R11	270Ω	2	URF-035	BW-2-270	Pilot Light Shunt
R12	33Ω	1	URE-013		Surge Limiter
R13	2300Ω	10	RRW-027		Filament Dropping-Wire Wound
R14	1500Ω	½	URD-053	BTS-1500	Filament String
R15	680Ω	½	URD-045	BTS-680	Filament String
R16	470Ω	½	URD-041	BTS-470	Filament Shunt
R17	470KΩ	½	BRD-113	BTS-470K	Isolation

Note Some models use 3.3Meg resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T1	8.4KΩ	3.7Ω	420Ω	.4Ω	RTO-050	A-3879	A-2932	RO-16	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			General Electric PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	V.C. IMP.		ST113		
SP1	PM	3.7Ω	S-400C-19	Mod. P4-X	4A1	
	CONE DIA.	V.C. DIA.				
SP2	4"	9/16				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	General Electric PART No.		
L1	Loop Ant.	3.6Ω		RLL-045		
L2	RF Coil	100Ω	6Ω	RLB-030		
L3	Osc. Coil	2.8Ω	7.5Ω	RLC-068		
L4	1st IF	20Ω	20Ω	RTL-052		
L5	2nd IF	18Ω	18Ω	RTL-079		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	General Electric PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.065A	RER-001	NB-5	5M4	

DIAL LIGHTS

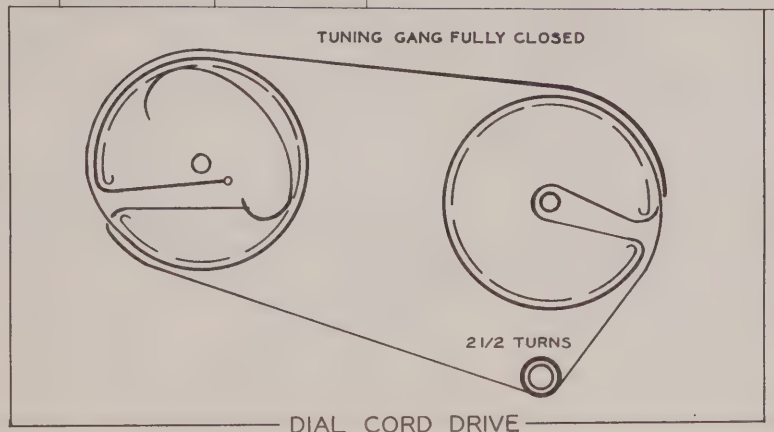
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					General Electric PART No.		
M2	Bayonet	2	6	Pink			Type number 49.

BATTERIES

ITEM No.	VOLTAGE	General Electric PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M3A	9V "A"				756W			F6Z60	
B	90V "B"								

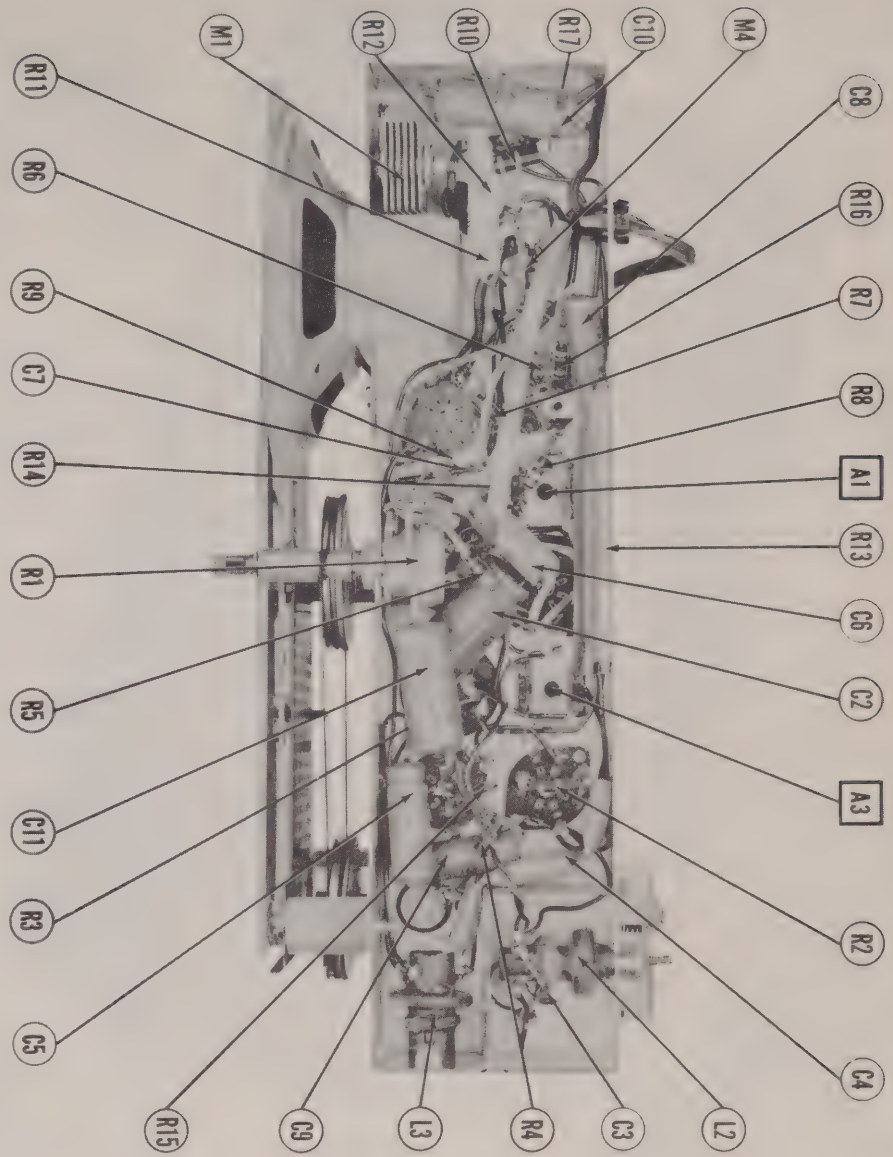
MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M4	Switch	RSW-088	AC/DC-Battery
M5	3 Gang Var. Cap.	RCT-051	(22-445MMF, 25-453MMF, 28-191MMF)
	Dial Scale	RDS-106	
	Dial Pointer	RDP-060	



DIAL CORD DRIVE

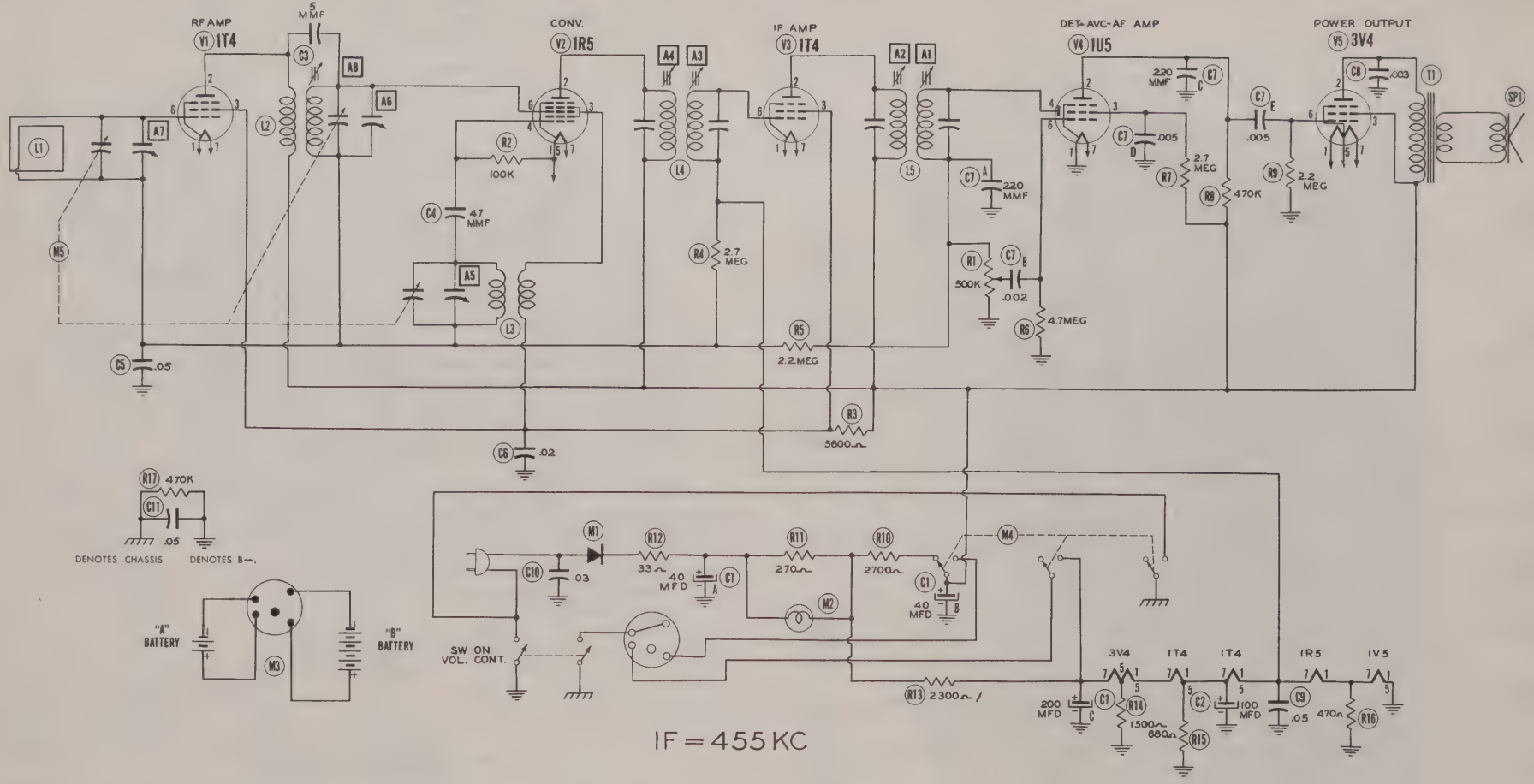
CHASSIS—BOTTOM VIEW



SET 147 FOLDER 6

GENERAL ELECTRIC MODEL 610

GENERAL ELECTRIC MODEL 610



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4		85VDC	60VDC	0V		.2VDC	
V 2	1R5		85VDC	6.3VDC	8-11VDC		.2VDC	6.3AC
V 3	1T4		85VDC	60VDC	.2VDC		2.9VDC	
V 4	1U5	0V	32VDC	17VDC	0V	0V	0V	
V 5	3V4		80VDC	85VDC	85VDC		0V	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†3.1KΩ	†8.4KΩ	0Ω	*	1.6Meg	*
V 2	1R5	*	†2.8KΩ	†8.4KΩ	100KΩ	*	1.6Meg	*
V 3	1T4	*	†2.8KΩ	†8.4KΩ	1.6Meg	*	470Ω	*
V 4	1U5	*	†470KΩ	†2.7Meg	500KΩ	Inf.	4.7Meg	*
V 5	3V4	*	†3.2KΩ	†2.8KΩ	†2.8KΩ	*	2.2Meg	*

ALL MEASUREMENTS TAKEN WITH SWITCH IN AC/DC POSITION.

$ TAKEN WITH VACUUM TUBE VOLTMETER.

† MEASURED FROM OUTPUT OF M1.

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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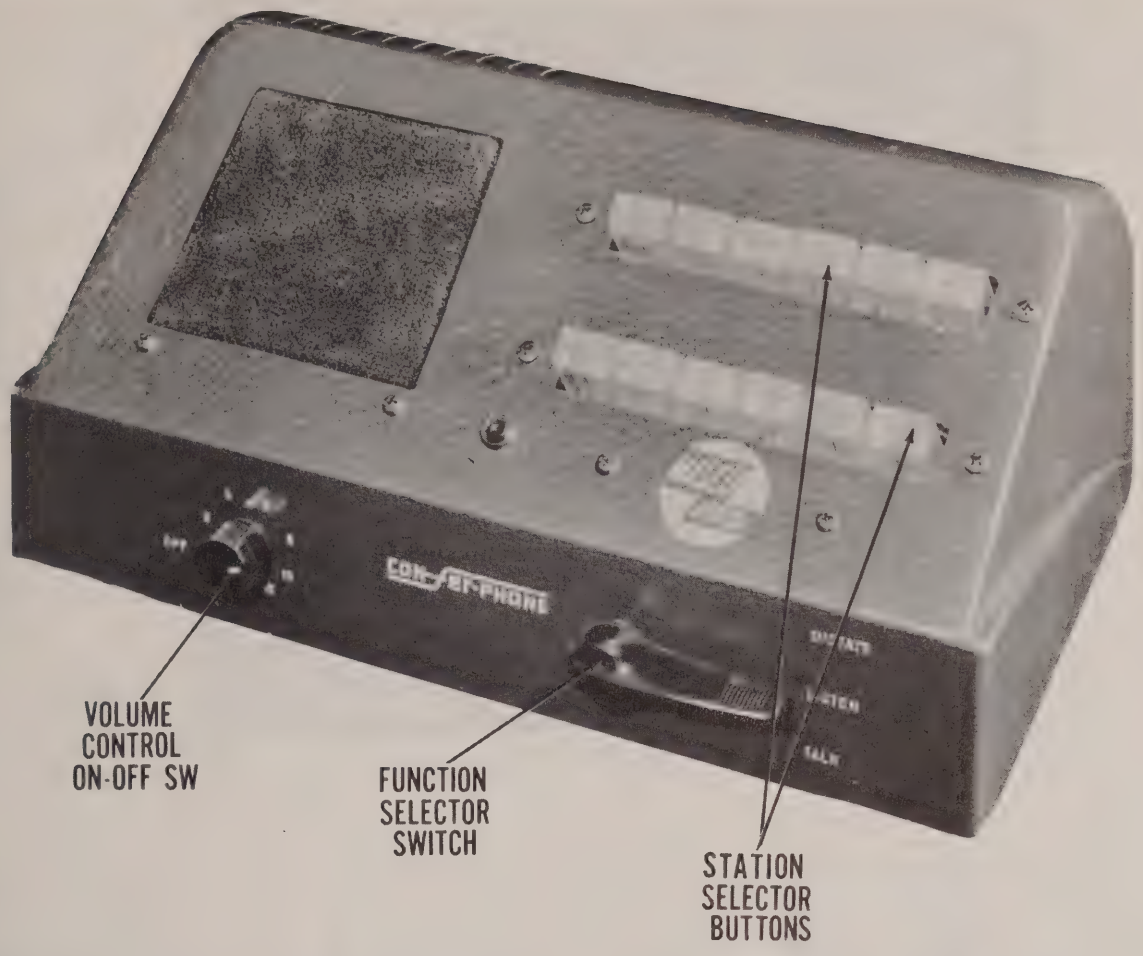
147-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO
MODELS JMP-6, JMP-12



MASCO
MODELS JMP-6, JMP-12

TRADE NAME	Masco, Models JMP-6, JMP-12
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th Street, Long Island City, New York
TYPE SET	AC-DC Operated Intercommunications System
TUBES (TWO)	Types 12SJ7 AF Amp., 50L6GT Power Output
POWER SUPPLY	110-120 Volts AC-DC RATING .25 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12SJ7	12SJ7	8N	
V2	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/50-30-20		EDL44215		R1110	Filter
B	40	150							Filter
C	20	150							Decoupling
C2	10	50		PRS50/10		BR105		TVA-1304	Output Cathode
C3	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AF Amp. Screen
C4	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S47	AF Amp. Grid
C5	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C6	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Tone Comp.
C7	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	34-011-182	Q13-133	AM-60-Z	B-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWA	Not Req.	Attach to R1A Per Instructions
R2	50Ω	2		W-50 #	43-50 #	VK-116	Hum Adjustment-Wire Wound

Fashion shaft to duplicate original.

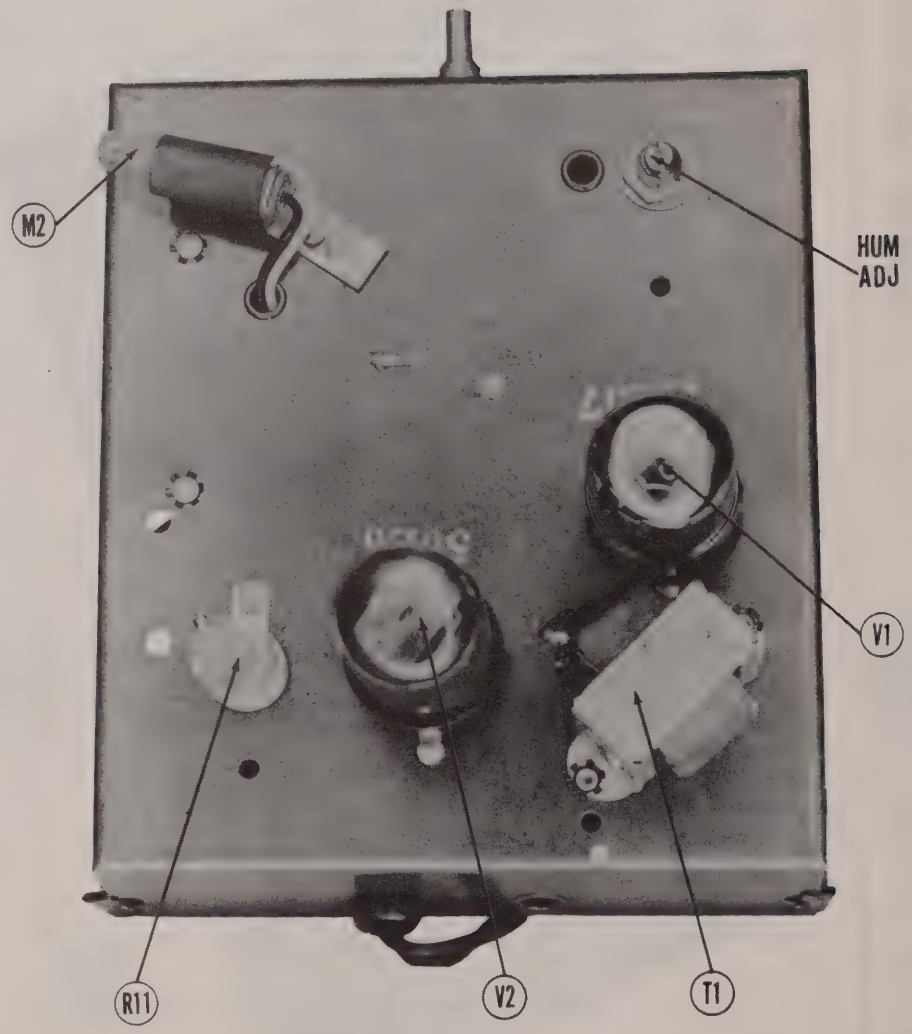
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
R3	15Meg	½		BTS-15Meg	AF Amp. Grid
R4	1Meg	½		BTS-1Meg	AF Amp. Screen
R5	270KΩ	½		BTS-270K	AF Amp. Plate
R6	150Ω	½		BTS-150	Output Cathode
R7	2200Ω	½		BTS-2200	Filter
R8	150Ω	½		BTS-150	Filter
R9	47KΩ	½		BTS-47K	Indicator Network
R10	47KΩ	½		BTS-47K	Indicator Network
R11	390Ω	10			Filament Dropping-Wire Wound
R12	50Ω	1			Surge Limiter-Wire Wound

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	12Ω	22K	10.5Ω	815	13IN2C				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES:		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	1600Ω	13Ω	145Ω	1.2Ω	13-0-2C		A-2928		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	V.C. IMP.				
SP1	PM	13Ω			4A J7Z13	
	CONE DIA.	V.C. DIA.				
SP2	4"	9/16"				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MASCO PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.053A		NB-5	8J1	

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M2	Neon Bulb		Type NE-51
M3	Switch		Talk-Listen
M4	Switch		Station Selector (6 or 12)

INSTALLATION

GENERAL

1. From the back of each master station emerges a cotton-braid covered TAP-IN cable which must be wired to the interconnecting cable between the different units in system. This is best accomplished by means of junction boxes BJ-6 (for models JMP-6 and JS-6) and BJ-12 (for model JMP-12). Junction boxes are not factory installed (supplied only on special order) and must be ordered separately.

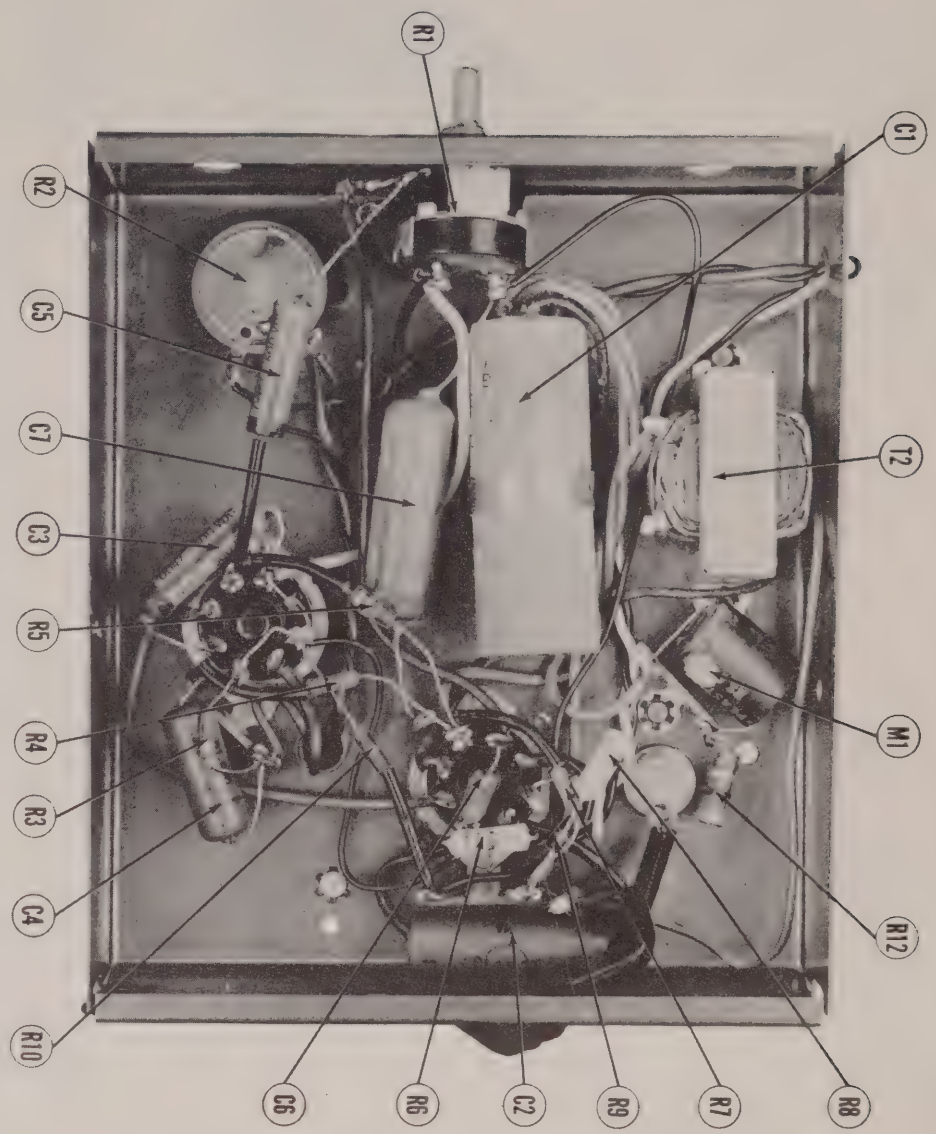
2. Remember that the longer the cable the heavier should be the wire gauge. For distances below 200 ft. use #20 or heavier. For distances above 200 ft. use #18 or heavier.

3. Each master TAP-IN cable contains two pairs of twisted cable for CALL-IN purposes. The twisted pair within the copper braid is the CALL-IN pair for the Remote Stations and should be wired to the pair of terminals marked "R" if a junction box is used. The black and white twisted pair is the CALL-IN pair between Master Stations and should be wired to the pair of terminals marked "M" on the Junction Box.

   Below is listed the color code for the TAP-IN cables. For each push button on a unit there is a distinctly colored pair of wires in the cable. Each pair consists of one common wire which is WHITE and one color coded wire. Great care must be taken in wiring the cables to the junction boxes so that the common WHITE wires are not intermixed. Also wire all commons in one row (either top or bottom) of junction box and follow the same practice throughout the system. If no junction boxes are used, be sure that in wiring pairs of cable together the common leads and the coded leads are tied together. Also tape up individually all unused leads.

   The numbers in the listing refer to the Push buttons. The button next to the speaker cutout at the left is 1. In the JMP-12 the bottom row of switches starts with 7 at the speaker cutout. Wire the colors to the numbered and lettered pairs on the junction boxes as shown below:

CHASSIS—BOTTOM VIEW



MASTER TO MASTER TO REMOTE SYSTEM:

This system is a combination of the two systems discussed previously and installation is therefore a combination of the procedure outlined up to now.

Determine first how many master units are to be used in the system. If for example 4 masters are to be used for Master to Master communication, then 3 buttons will be left on a JMP-6 master (or 9 buttons on a JMP-12 master) to hook up remote stations. Remote stations JL and JS can communicate with one master, while remote station JS-6 can communicate with up to 6 different master units.

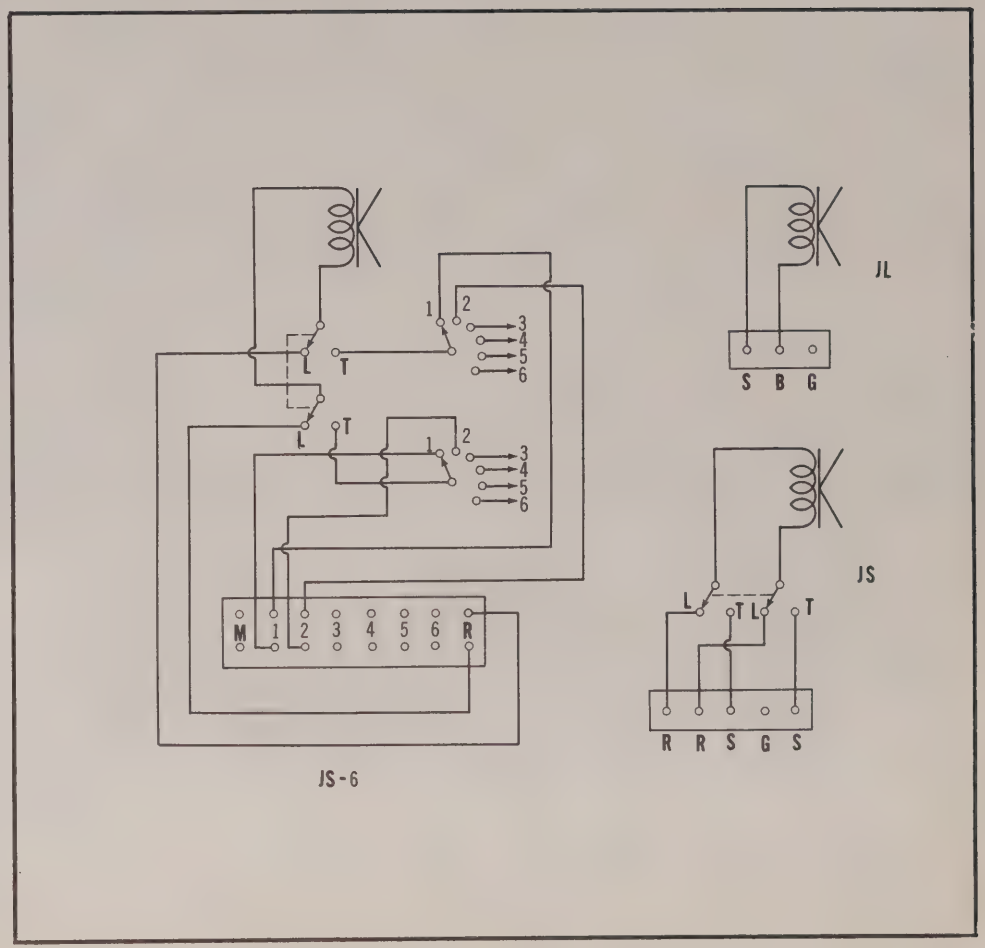
A. PRIVATE HOOK-UP:

The system is ready for operation if PRIVATE remote hook-up only is desired.

B. MIXED PRIVATE AND NON-PRIVATE HOOK-UP:

If some or all the remote stations of one MASTER unit are to be operated NON-PRIVATE (eavesdropping) follow the procedure as outlined under (C) to modify the master unit. In installing connect the Master to Master system first. Then install the Remote stations.

COLORS OF INTERCONNECTING CABLES	STATIONS													
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
1	M	1	1	1	1	1	1	1	1	1	1	1	1
2	1	M	2	2	2	2	2	2	2	2	2	2	2
3	2	2	M	3	3	3	3	3	3	3	3	3	3
4	3	3	3	M	4	4	4	4	4	4	4	4	4
5	4	4	4	4	M	5	5	5	5	5	5	5	5
6	5	5	5	5	5	M	6	6	6	6	6	6	6
7	6	6	6	6	6	6	M	7	7	7	7	7	7
8	7	7	7	7	7	7	7	M	8	8	8	8	8
9	8	8	8	8	8	8	8	8	M	9	9	9	9
10	9	9	9	9	9	9	9	9	9	M	10	10	10
11	10	10	10	10	10	10	10	10	10	10	M	11	11
12	11	11	11	11	11	11	11	11	11	11	11	M	12
13	12	12	12	12	12	12	12	12	12	12	12	12	M



JMP-6	JMP-12	
M - Black - White	M - Black - White	7 - Dark Brown - White
1 - Brown - White	1 - Light Brown - White	8 - Light Blue - White
2 - Red - White	2 - Red - White	9 - Black - Red Tracer - White
3 - Orange - White	3 - Orange - White	10 - Black - Dark Green Tracer - White
4 - Yellow - White	4 - Yellow - White	11 - Light Green - White
5 - Green - White	5 - Dark Green - White	12 - Dark Grey - White
6 - Blue - White	6 - Dark Blue - White	R - Black - Light Green Tracer (Within Copper Braid). Connect braid to external ground.
R - Grey - White (Within copper braid). Connect braid to external ground.		

SINGLE MASTER TO REMOTES

a. Private Hook-up.

1. The system is supplied ready for private operation. In this hook-up the master cannot eavesdrop on the remote and both the Master JMP-6 or JMP-12 and the Remote Stations (JS) must use their Press-to-talk switches in a conversation. If a JL remote station is used, it can only receive messages from the master but cannot call or answer the master. A MB-8N Booster amplifier may be used in this system.

b. Non-Private Hook-up.

In this system the master can eavesdrop on all remotes. To accomplish a non-private hook-up the master unit must be modified slightly as explained below:

1. Make sure that unit is not plugged in to a power receptacle.
2. Turn Master unit upside down and remove half of bottom plate over Push Button portion of casting by unscrewing (4) self-tapping screws.
3. Look into inside of casting so that Press-to-talk switch is to your left.
4. Above the Press-to-talk switch there are 2 lug-strips marked from (1) to (8).
5. Connect and solder the bare wire emerging from lug #5 to lug #6 and the bare wire from lug #7 to #8.
6. Replace bottom plate.

c. MIXED - Private and Non-Private Hook-up.

Determine how many Remote Stations are to be Non-Private and assign them the highest push button numbers. Then proceed as follows:

1. Follow steps 1 to 5 as outlined in b. (Non-Private Hook-up).
2. Look at back of push button switch and note 2 rows of jumpers (covered with insulating tubing) at the bakelite deck of the push button switch. On model JMP-12 there are two such switches. If, for example, 2 remotes are to be operated NON-PRIVATE, cut out the 2nd pair of jumpers counting from the highest push button number. On model JMP-6 this would be the jumpers between the 4th and 5th positions and on model JMP-12 it would be jumpers between the 10th and 11th positions. In general, remember to cut out that pair of jumpers whose number, commencing to count from the highest push button number, is equal to the number of NON-PRIVATE remotes desired. Thus, for 3 NON-PRIVATE remotes, cut out the 3rd pair, for 4 NON-PRIVATE remotes the 4th pair etc., always beginning the count with the highest number, that is, #6 on JMP-6 and #12 on JMP-12.
3. Replace the bottom plate.

The interconnecting cable consists of as many twisted pairs as there are Remote Stations in the system. In addition one shield twisted pair is needed for the whole system.

ALL MASTER SYSTEM:

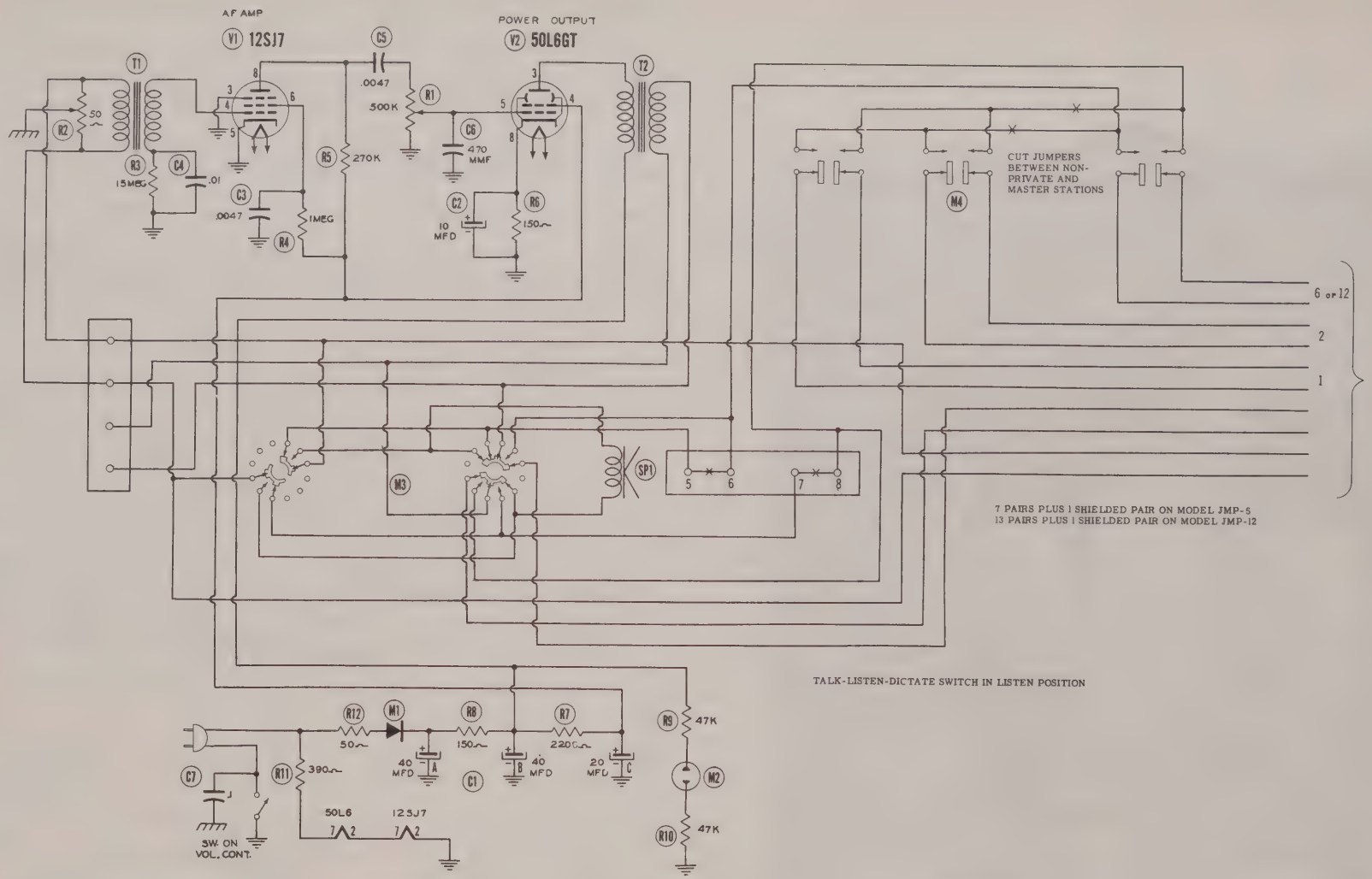
The system is supplied ready for operation and no modification of the unit is required.

The interconnecting cable will require as many twisted pairs of wires as there are Master units in the system.

The Master Stations must be wired to the lowest numbered push buttons. Thus, if there are 4 Masters in the system, use the first 3 buttons on each master. Use the chart on page 5 to determine the wiring of the TAP-IN cables emerging from the master units to the interconnecting cable.

1. Determine the number of Masters to be used in the system (up to 7 for JMP-6 and up to 13 for JMP-12).
2. Assign a Roman numeral to each Master.
3. Block off as many boxes vertically and horizontally as there are masters in the system. Thus, if there are 5 units in the system, the area blocked off will consist of 25 boxes, the first 5 across the first 5 down.
4. Enter the colors of the interconnecting cable in the empty first vertical column of the chart.
5. The numbers and the letter M in the boxes refer to the junction box designation and corresponding color code for the pairs in the TAP-IN CABLES as outlined in the GENERAL section of the INSTALLATION instruction.
6. Each vertical row under the Roman numerals refers to the numbers in one TAP-IN cable corresponding to that numeral.
7. Each horizontal row indicates the numbers in the various TAP-IN cables that are connected to the same color of the interconnecting cable.

   Thus, in a 3-station system, pair M of Station I, pair 1 of Station II, pair 1 of Station III would be connected to the same color in the interconnecting cable. Similarly, pair 1 of Station I, pair M of Station II, pair 2 of Station III would be interconnected.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SJ7	0V	0V	0V	-.7VDC	0V	19VDC	12VAC	23VDC
V 2	50L6GT	0V	12VAC	110VDC	110VDC	0V	85VDC	57VAC	7.8VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SJ7	0Ω	0Ω	0Ω	15Meg	0Ω	†1Meg	12Ω	†270KΩ
V 2	50L6GT	0Ω	12Ω	†295Ω	†2.3KΩ	1Ω	†50KΩ	62Ω	150Ω

† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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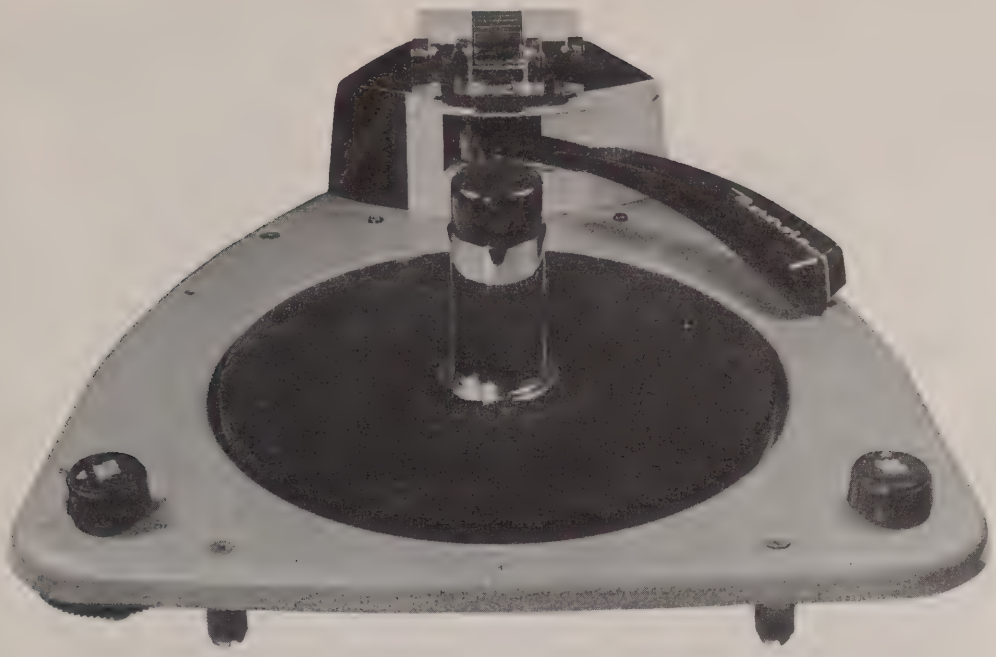
147-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA
MODELS RC36, RC36A



MOTOROLA
MODELS RC36, RC36A

GENERAL INFORMATION

The Motorola Models RC-36 and RC-36A Record Changers are three-speed, single-post changers, designed to play and automatically change the following records, not intermixed:

(a) Ten 12-inch 33-1/3 or 78 RPM records,

(b) Twelve 10-inch 33-1/3 or 78 RPM records,

(c) Twelve 7-inch 45 RPM records,

(d) Twleve 7-inch 33-1/3 RPM records.

A specially designed, single-point needle is used to play both standard and fine-groove records. Two interchangeable record spindles are used: A large-diameter spindle for 45 RPM records and a small-diameter spindle for all other type records.

The last record will be repeated until the changer is turned off. Turning the speed control knob to an "Off" position merely stops the rotation of the turntable. The phono motor will continue to run until the "power" or "phono" control on the radio panel is turned off.

The Model RC-36A record changer differs from the Model RC-36 only in the type of tripping mechanism. The RC-36 employs a limit switch, whereas the RC-36A uses a velocity trip, the operation of which depends upon the speed at which the tone arm approaches the center of the record, not upon any predetermined dimension from the center spindle.

The motor is designed to operate on 105-120 volts, 60 cycles AC only.

Manufactured by: Motorola, Inc.
4545 Augusta Blvd., Chicago 51, Ill.

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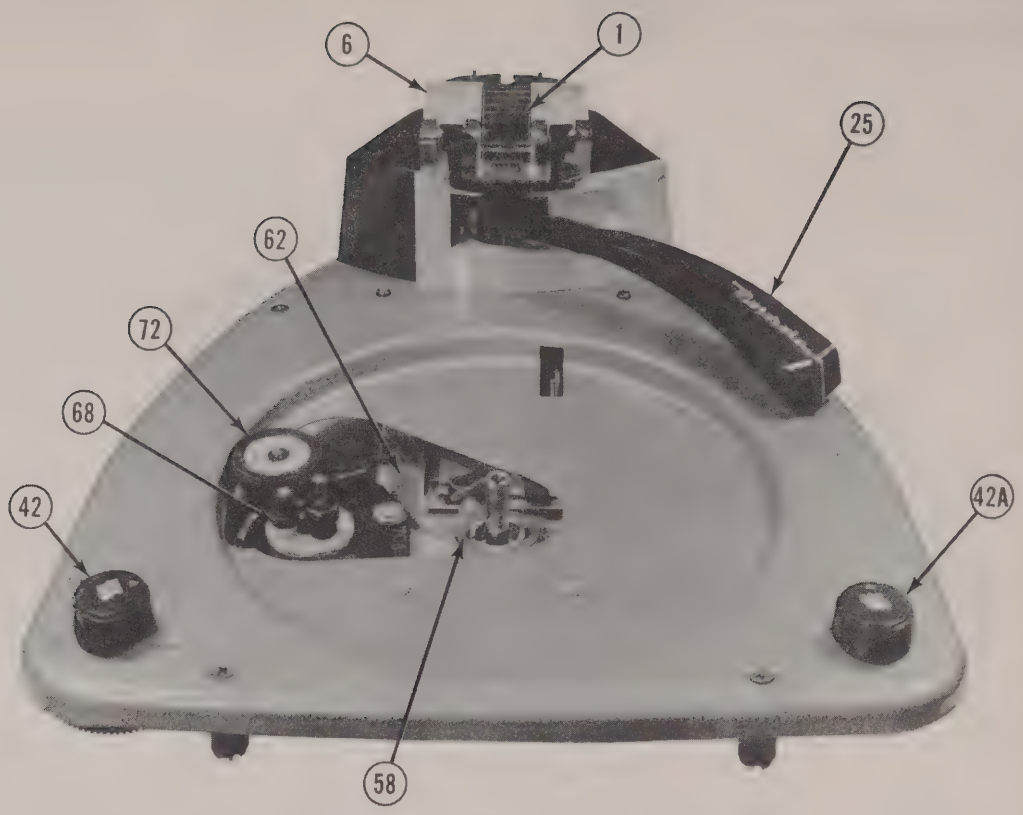


Figure 2

AUTOMATIC OPERATION

1. Turn the power switch on and the "phono radio" control to the "phono" position.

2. Select the proper centerpost for type record to be played.

(a) To play 33-1/3 and 78 RPM records, insert the small-diameter spindle into the hole in the center of the turntable, and rotate the spindle until the pin drops into the slot in the turntable bushing.

(b) To play 45 RPM records, insert the large-diameter spindle into the turntable hole and rotate, counterclockwise, until it reaches a stop. If the two metal separator discs of the spindle are protruding, remove the spindle, turn the spindle shaft until they disappear, and reinsert the spindle into the turntable.

3. Adjust the record support (16) to the correct position, according to the size record to be played.

(a) To adjust the record support, press down on the release (1) and move the record support to the correct position.

4. Raise the record clamp to a vertical position.

5. Place the records to be played on the centerpost in the desired sequence, with the last record on top:

(a) When playing small-hole records, rest them on the ledge of the record support and on the off-set of the spindle. Rest the large-hole records on the supports on the large spindle.

6. Lower the record clamp to the records.

NOTE: Do not lower the record clamp when playing 45 RPM records.

7. Rotate the speed control knob (42) to the position corresponding to the type record.

8. Momentarily turn the "Reject" knob (42A) clockwise. The entire stack of records will now be played and the last record will repeat until the changer is turned off.

To Reject a Record -

Any record may be rejected, while playing, by turning the "Reject" knob (42A) clockwise.

To Stop the Changer -

1. To stop the changer, lift the pickup arm from the record and move it to the right to clear the record.

CAUTION: Do not stop the changer during the change cycle, but allow the pickup arm to come to a rest position on the record before moving it outward.

2. Turn the speed control (42) to the "Off" position.

NOTE: This stops the rotation of the turntable only. The motor will continue to run until turned off, either by the "phono" control or the power switch on the radio panel.

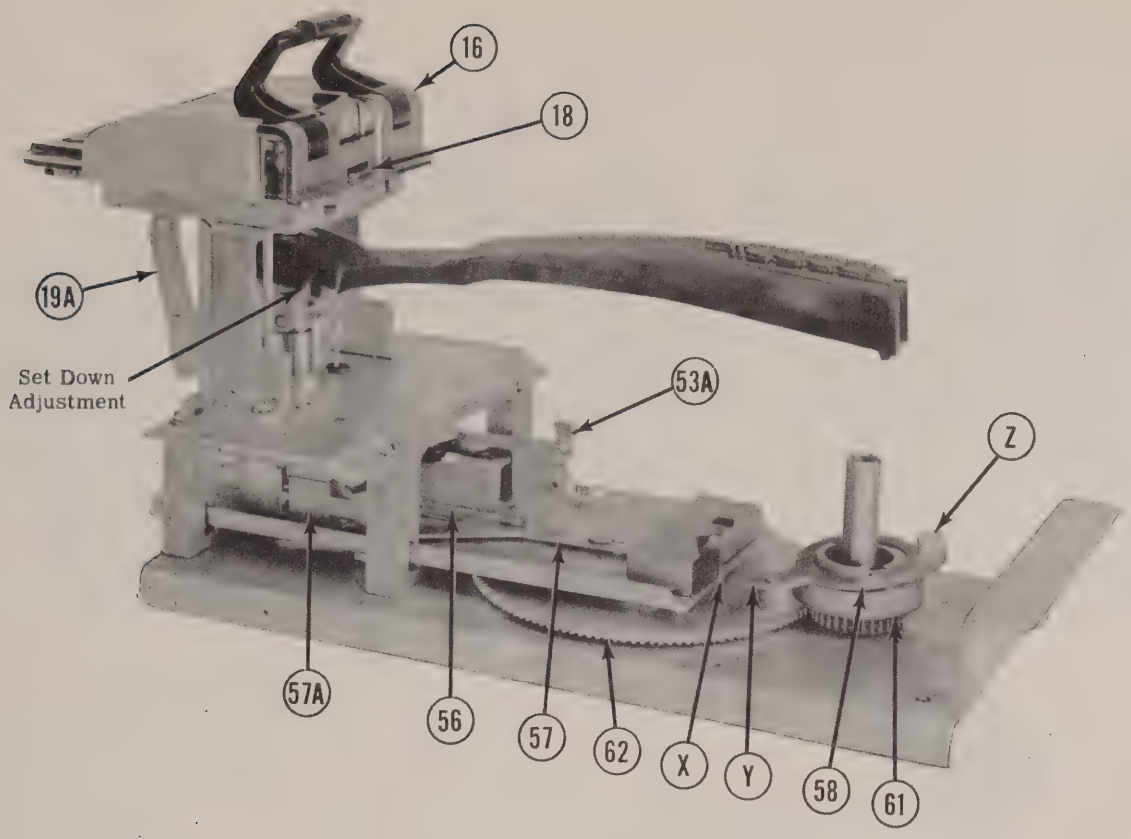


Figure 3

CHANGE CYCLE

The change cycle may be initiated by means of the pickup arm entering the eccentric cycling grooves of the record, or by manual operation of the "Reject" knob (42A).

In Model RC-36, as the pickup arm enters the cycling groove of the record, the trip finger of the trip and set-down arm assembly (51) engages the trip flag (57A); this, in turn, trips the trip lever arm (57), which is actuated by the trip lever arm spring (56). As the trip lever arm (57) moves back, finger (X) moves away from the drive clutch lever (58), causing the weighted end of the drive clutch lever (58) to lower. As a result, flange (Z) of the clutch lever (58) engages the drive screw (38) on the turntable. With this engagement, the drive gear (61) rotates with the turntable and, in turn, the cycling gear (62) is rotated (Refer to Figure 5).

In Model RC-36A, as the pickup arm approaches the eccentric cycling groove of the record, the trip finger of the set-down arm and trip arm assembly (108) (See Figure 7) tends to release the trip flag (107A) (See Figure 8). However, with each revolution of the turntable, the wiper, which is mounted on the hub of the turntable, strikes the formed end of the trip rod (107) and resets the trip flag (107A). When the pickup arm moves in the eccentric cycling groove of the record, however, the movement of the trip arm is so rapid that the trip flag (107A) cannot be reset by the wiper. This releases the trip flag (107A) from the trip lever arm (106B), which is actuated by the trip lever spring (56). This action causes finger (X) of the trip lever arm (106B) to be pulled away from the drive clutch lever (58), causing the weighted end of the drive clutch lever (58) to drop, and flange (Z) to engage the drive screw on the turntable. This engagement causes the drive gear (61) to rotate with the turntable, which, in turn, drives the cycle gear (62).

NOTE: In the following description, the first reference number, appearing when two numbers are together, refers to the Model RC-36. The second number refers to the RC-36A.

As the cycle gear (62) revolves, its roller moves the slide channel (53) - (106) backward; in so doing, the incline (AA) (See Figure 5) moves against the pickup arm shaft (29), raising the pickup arm from the record. As the slide (53) - (106) continues to move backward, clutch fingers (55) - (106A) engage the set-down arm assembly (51) - (108), which, in turn, swings the pickup arm out clear of the record. At the extreme backward travel of the slide channel, the push-off lever (19A) (See Figure 3) is actuated as it engages the end of the slot in the slide in which it has been riding. The push-off lever (19A), in turn, actuates the push-off link (15) and the push-off lever (18), thereby ejecting the lower record from the record support and permitting it to drop to the turntable.

At the same time, the restoring lever (53A) - (106C) engages and lowers the set-down flag (48) - (109A), which will index the pickup arm when the slide channel moves forward. The trip lever arm (57) - (106B) is reset with the trip flag (57A) - (107A) by the engagement of the trip lever arm with the trip slide cocking stud; and the trip arm assembly (51) - (108) is reset for the next operation by the rear projection of the trip arm engaging a stud on the slide guide block.

At this point, the slide channel moves back toward the spindle. As a result, the clutch fingers (55) - (106A), still engaged with the set-down arm assembly (51) -

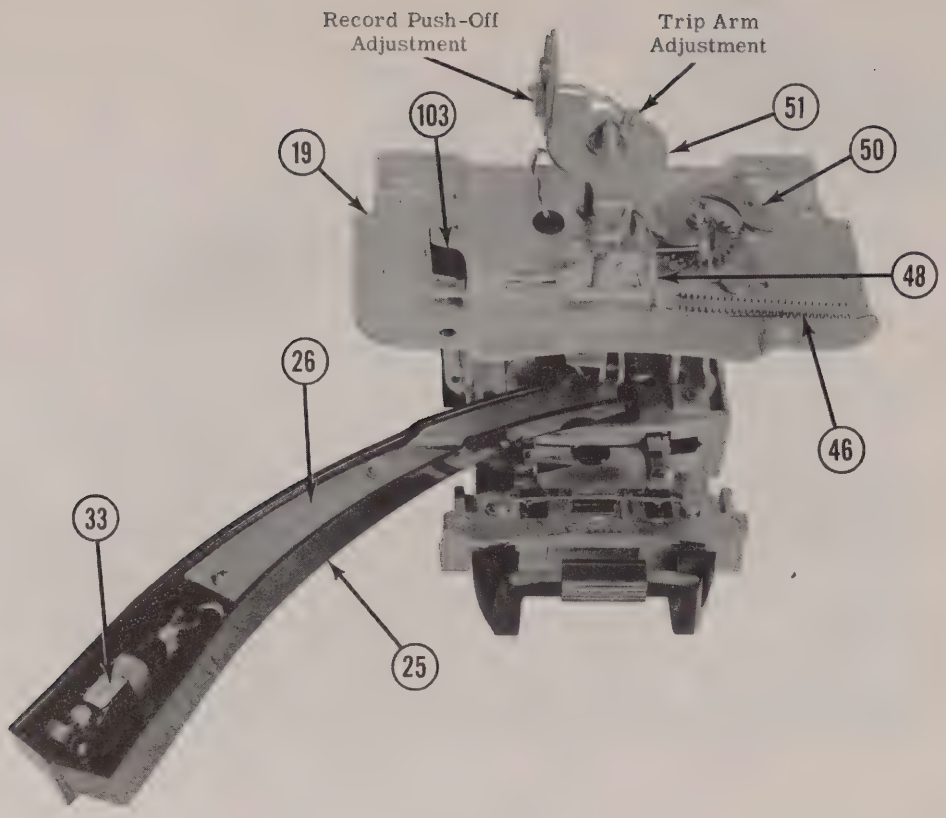


Figure 4

(108), swing the pickup arm inward until the set-down arm engages the set-down flag (48) - (109A). This positions the pickup arm for proper set-down. The pickup arm shaft now rides down the incline (AA) of the slide channel, lowering the pickup arm to the record.

The restoring lever (53A) - (106C) now moves the set-down flag (48) - (109A) away from the set-down arm assembly (51) - (108), thereby giving free movement to the pickup arm. Also, the drive clutch lever (58) rides up the trip lever incline (X), which disengages the drive clutch lever (58) from the drive dog screw (38) in the turntable. This completes the change cycle.

Operation for 45 RPM Record Drop -

The operation of the record changer is the same for 45 RPM as it is for 33-1/3 and 78 RPM operation, except for record drop. To operate the changer for 45 RPM records, see "Automatic Operation."

The function for 45 RPM record drop is as follows:

The "Reject" plate and roller assembly (90) is held in contact with the drop cam (87) by spring (93). The drop cam (87) is fastened to the cycle gear (62). Therefore, as the cycle gear (62) rotates and the slide channel moves backward, the "Reject" plate (90) moves forward to contact the timing stop (91), preventing it from rotating. Since the turntable and spindle continue to rotate, the timing stop (91) and spindle shaft (100) remain stationery due to this engagement of the timing stop and "Reject" plate. This causes the two pinion gears in the upper section of the spindle to rotate around the gear on the spindle shaft (100). As a result, the record supports recede into the spindle, and the separator discs, which are mounted above each record support and staked to the pinion gears, are rotated outward to separate the lower record from the stack, supporting the remainder of the stack at the same time. This allows the lower record to drop to the turntable. With continued rotation of the turntable and spindle, the record supports move outward, due to the compression spring (97) and the action of the pinion gears, while the separator discs recede into the spindle.

As the slide channel moves forward, the "Reject" plate (90) is moved back by the drop cam (87), thereby releasing the timing stop (91) and allowing it and the spindle shaft to revolve. This completes the cycle for the 45 RPM record drop.

Operation for Pickup Arm Set-Down Point-

The set-down point of the pickup arm is determined by the position of the set-down flag (48) - (109A). The position to which the set-down flag is set is controlled by the record support assembly (16). Therefore, any movement of the record support assembly is transferred to the set-down cam and gear assembly (51) through the rack gear on the record support (16) and the gear and pinion shaft of the record support housing assembly. The set-down cam stud on the slide plate rides with the set-down cam (50), due to the tension of the slide plate spring (46). Therefore, any action of the set-down cam will affect the position of the set-down flag (48) - (109A).

ADJUSTMENTS

All adjustments for the Model RC-36 are the same as

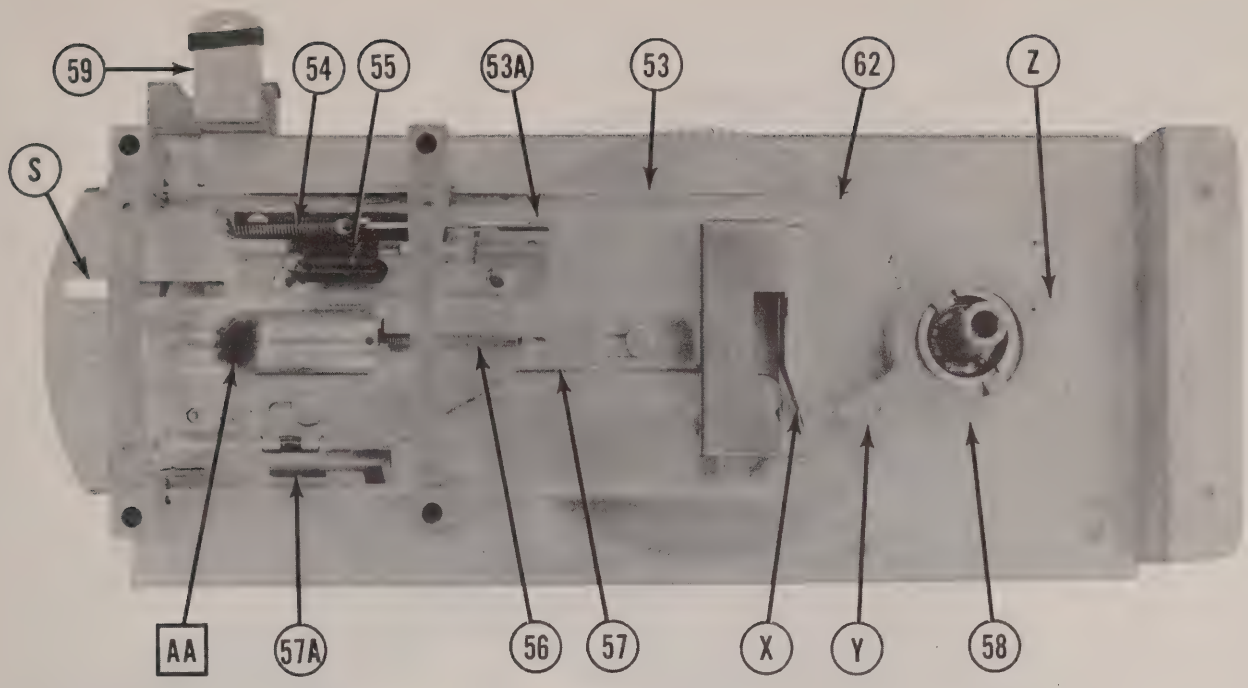


Figure 5

the RC-36A, except the "Trip Adjustment."

Needle Set-Down Adjustment -

1. Move the record support (16) to the 7" position.

2. Place the small-diameter spindle in the turntable.

3. Place a 7" record over the spindle and lower it to the turntable.

4. Turn the "Reject" knob (42A) to "Rej.," then release.

5. Rotate the turntable clockwise, by hand, and observe the landing of the needle. The needle should land 1/8" in from the edge of the record.

6. To adjust the pickup arm for proper set-down, turn the set-down adjustment screw clockwise to move the pickup arm toward the spindle, or counter-clockwise to move the pickup arm away from the spindle.

Pickup Arm Height Adjustment -

If the pickup arm strikes the bottom record of a stack resting on the 45 RPM spindle, or if the pickup arm does not rise sufficiently to clear a 1-inch stack of records on the turntable, make the following adjustment:

1. The height adjustment screw is accessible through a hole in the rear of the record support housing (22A).

2. Move the pickup arm outward to bring this adjustment screw into position for adjustment.

3. Turn this height adjustment screw clockwise to raise the arm, or counterclockwise to lower the arm.

Record Push-Off Lever Adjustment -

Correctly adjusted, the push-off lever (18) should extend a minimum of 1/32" from the record support during the record dropping portion of the change cycle. If an adjustment is necessary, proceed as follows:

1. Remove the cover (22A) to gain access to the rear of the record changer.

2. Rotate the "Reject" knob clockwise and release; then rotate the turntable clockwise, by hand, until the record push-off lever (18) is at its maximum forward travel.

3. Turn the eccentric push-off adjustment screw (See Figure 4) until the push-off lever (18) extends at least 1/32" beyond the lip of the record support (16).

Turntable Drive Pin Adjustment -

If a clicking noise is heard while a record is being played, the drive dog adjustment screw (38) on the turntable is striking the drive dog (Z) of the clutch lever (58) (See Figure 3). Adjust the drive dog screw (38) as follows:

1. Remove the turntable.

2. Loosen the hex nut (39) and turn the drive dog adjustment screw (38) counterclockwise so that the adjustment screw misses dog (Z) of the clutch lever (58).

NOTE: If the drive dog adjustment screw is turned out too much, it will fail to engage the clutch lever (58) when the mechanism is tripped, thus preventing the changer from cycling.

Trip Adjustment for Model RC-36 -

If the mechanism does not trip after playing a record, or trips before a record is completed, the set-down arm assembly (51) is out of adjustment (See Figure 4).

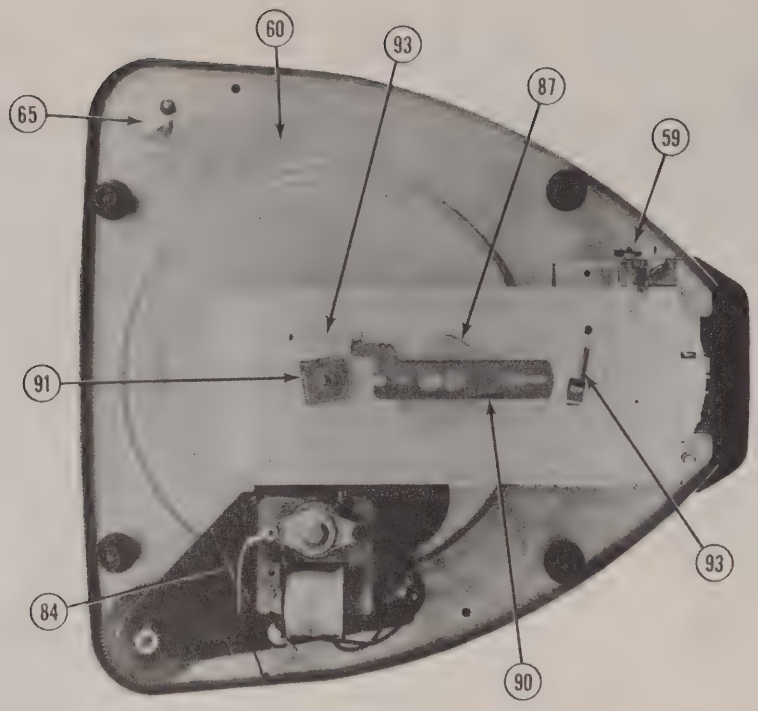


Figure 6

Make the trip adjustment as follows:

1. First check the needle set-down to see if it is landing properly on the record. Make adjustment, if necessary (See paragraph on "Needle Set-Down").

2. If, after an adjustment of the set-down point is made and the tripping mechanism is still faulty, remove the housing cover (22A) in order to gain access to the rear of the changer

3. Turn the set-down adjustment screw (See Figure 3) in until the end of the set-down screw is even with the pickup arm.

4. Adjust the trip arm adjustment stud (See Figure 4) until the meahanism trips correctly.

5. Readjust the needle set-down.

Trip Adjustment for Model RC-36A -

If the mechanism does not trip after playing a record, or trips before a record has completed its play, proceed as follows:

1. Remove the turntable.

2. Measure the distance between the outer edge of the hub on the turntable and the point of contact of the trip rod on the wiper, which is mounted on the underneath side of the turntable. The dimension should be approximately 7/8". Bend the wiper bracket if necessary.

3. Check the operation by playing a 78 RPM record and a 33-1/3 RPM record. If the changer trips too soon at 78 RPM, bend the wiper bracket downward slightly (toward the trip rod). If the changer does not reject at 33-1/3 RPM, bend the wiper bracket upward slightly (away from the trip rod).

Timing the Record Changer -

If the drive gear (61) has been removed and the changer tripped, the changer must be retimed (See Figure 5). To time the changer, rotate the cycle gear (62) until the cycle gear roller is directly in line with the spindle post and slide arm (57); then pull the trip lever (57) forward until it is locked by the trip flag (57A). Now place the drive clutch lever (58) and drive gear (61) in position (as shown in Figure 8), so that the weighted end of the clutch lever (58) rests on the lower edge of the trip lever incline. Check the timing by playing a stack of 45 RPM records. If a record of the stack fails to drop properly during a cycle, move the drive gear (61) one "tooth" and play another stack of records to again check the timing.

To Remove the Slide Release Hinge (1) -

1. The record slide release hinge (1) is held in place with a spring clip (3). To release the clip, place a piece of stiff paper on both sides, about halfway back of the release hinge (1). Pull the paper forward, simultaneously lifting upward on the release hinge.

TROUBLES

78 RPM or 33-1/3 RPM Records Fail to Drop -

1. Push-off lever (18) not adjusted properly:

(a) See "Push-Off Lever Adjustment."

2. Record center hole binding on spindle:

(a) Ream record hole out with a pencil.

45 RPM Records Fail to Drop -

1. Drive gear (61) does not mesh with cycle gear (62) properly.

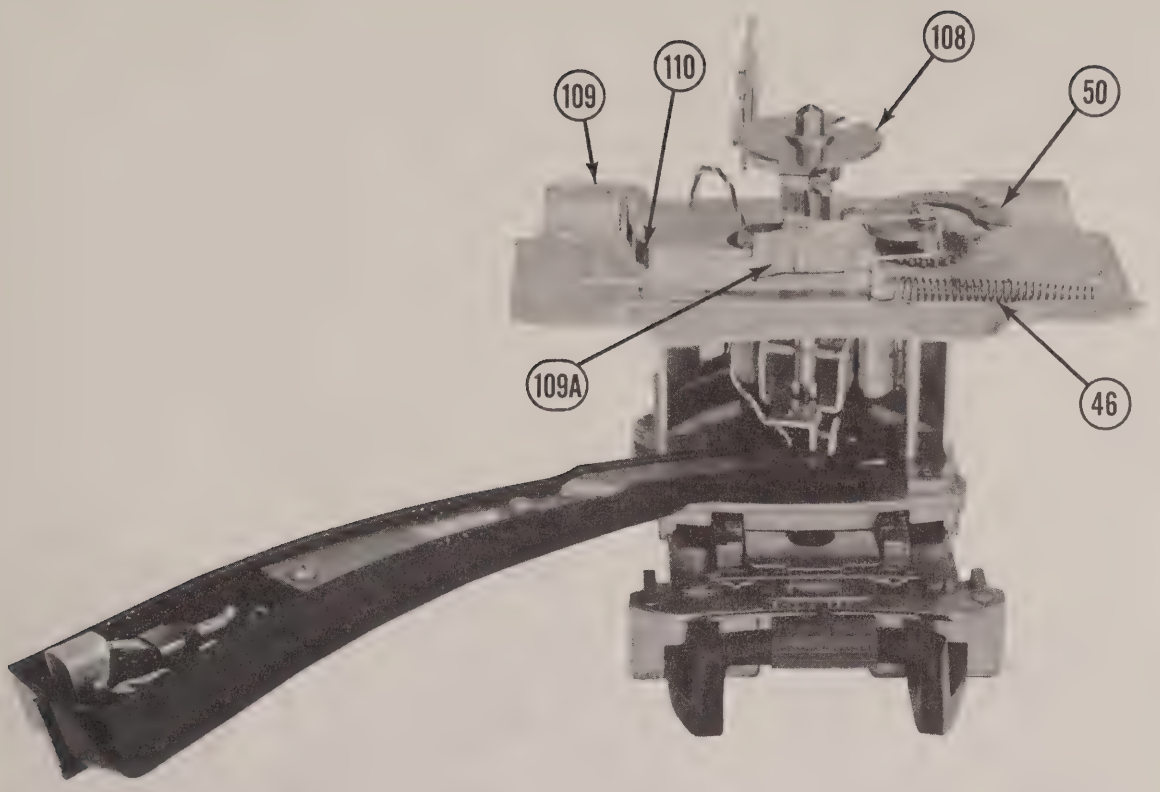


Figure 7

Pickup Arm Does Not Set Down in Proper Position -

1. Adjust the pickup arm set-down adjustment screw (See paragraph on "Needle Set-Down Adjustment" and Figure 3).

Mechanism Trips Before Record is Completed, or Does Not Trip After Record is Completed -

1. Trip mechanism not adjusted properly:

(a) See "Trip Adjustment for Model RC-36 and RC-36A."

2. Trip lever spring (56) weak or not connected.

If this is true, the trip arm (57) will not be actuated, thereby preventing the changer from tripping.

Changer Cycles Continuously -

1. Trip flag (57A) binding in an outward position, thereby not engaging the trip arm lever (57):

(a) Clean the trip flag with carbon tetrachloride. Do not lubricate.

2. Turntable bearings (63) or washers (64) missing, thus allowing the turntable to stay engaged with drive clutch lever (58).

3. Drive clutch lever (58) 180° out phase:

(a) Reverse the drive clutch lever position on the drive gear (61).

Motor Rotates but Turntable Does Not -

1. Spring (84) loose or missing:

(a) If this spring is loose or missing, the motor shaft will not be held in engagement with the speed control turret assembly (68).

2. Spring (71) loose or broken:

(a) If this is true, the idler wheel (72) will not be held in engagement with the speed control turret (68) and the turntable rim.

Irregular Turntable Speed -

1. Grease, oil or foreign material on the motor shaft, pulleys of the speed control assembly (68), idler wheel or turntable rim:

(a) Clean with carbon tetrachloride.

Mechanism Fails to Trip When Reject Knob is Turned -

1. "Reject" rod (60) not connected.

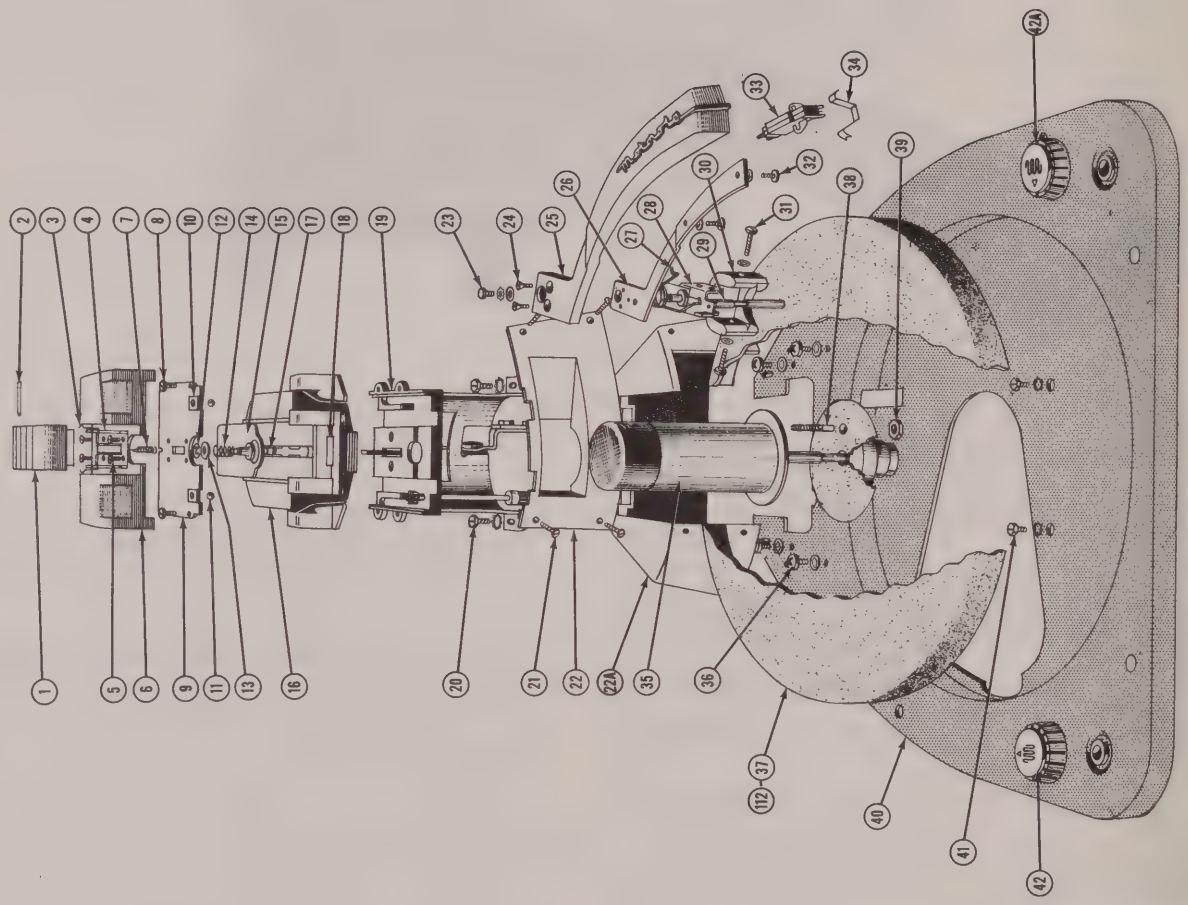
2. Trip lever spring (56) weak or not connected.

If this is true, the trip arm lever (57) will not be actuated when it is released by the trip flag (57A).

Needle Jumps Grooves -

1. Record changer not level:

(a) Use a torpedo, or similar type, level on the record changer baseplate. Use adequate shims to level the record changer pan, or radio com-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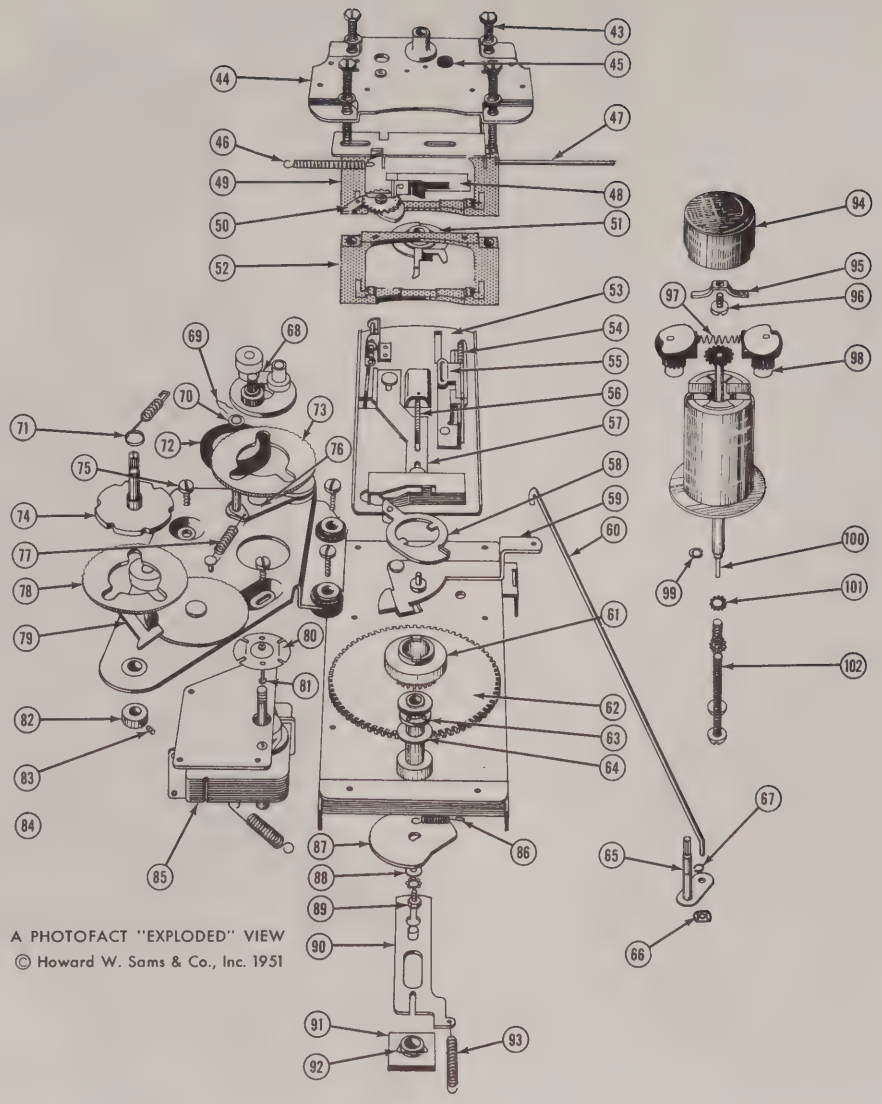

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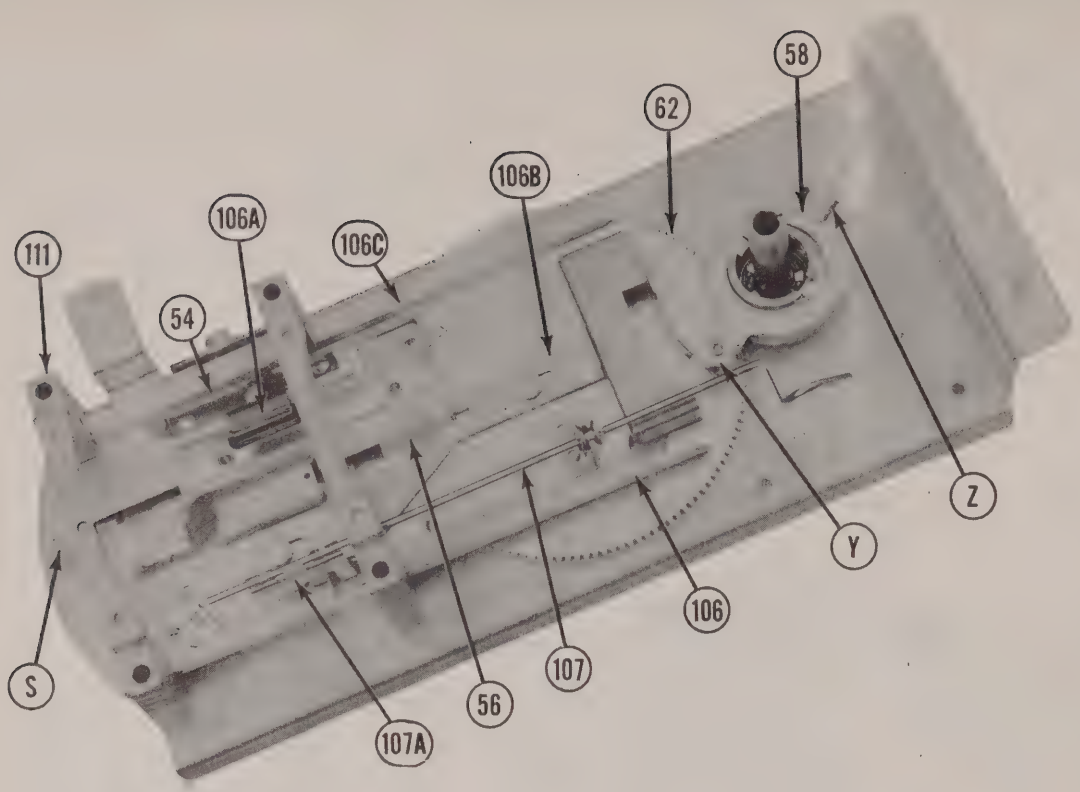

Figure 8

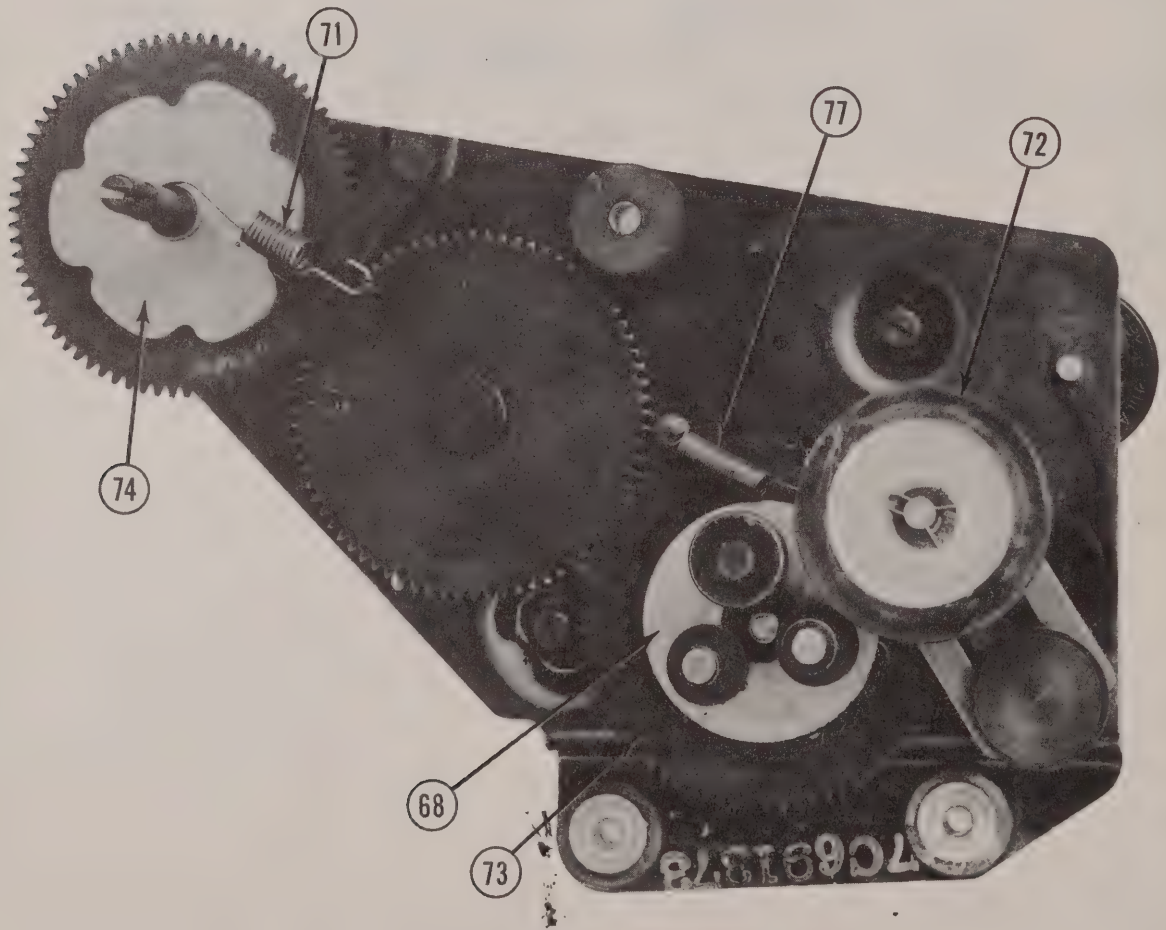

Figure 9

bination cabinet, to achieve perfect level.

2. Needle may be clogged by accumulation of lint, dirt, etc., or tip may be chipped or worn.

3. Pickup leads too tight.

4. Check the pickup arm shaft (29) for binding.

Two Records Drop at Once -

1. Hole in record too large. Check the diameter of the hole in the record. An oversize hole will cause two records to drop at once.

Noise During Playing of Record -

1. Rumble:

(a) From motor. If a low-pitched rumbling sound comes from the loud speaker while a record is being played, check the motor grommets to be sure the motor is freely suspended on them. The motor lead wires should have enough slack to allow the motor to float. Motor rumble may also come from an unbalanced motor roter; in this case, replace the motor.

(b) Defective turntable bearings can cause rumble. Check for foreign matter in the bearing, defective balls, binding between balls and ball retainer, and rough surface on washers. Clean ball bearing, sleeve bearing, and washers with carbon tetrachloride; and lubricate with a good grease.

2. Defective motor idler wheel. A rapid thumping sound, while the motor is running, may indicate a flat spot on the motor idler wheel (72). If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the idler. If the surface of the rubber tire is not smooth and even, replace the idler. Should the bearing of the idler wheel show signs of excessive wear, or be extremely wobbly, the idler wheel should be replaced.

LUBRICATION

Factory lubrication should be sufficient for a long period of time; however, should the changer require lubrication, do so as follows: Use a good grease on the turntable bearing (63), slide channel (53), the slide plate of the set-down flag and arm mounting assembly (44), and all other moving parts.

CAUTION: Do not lubricate the trip flag (57A) and trip lever assembly (57).

Do not allow any oil or grease to come in contact with the idler wheel tire, inside rim of the turntable, or any of the motor drive surfaces. If oil or grease should come in contact with any of these surfaces, clean them with carbon tetrachloride.

MOTOROLA RC-36
PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	55B691391	Hinge, Slide Release	21	3S490532	Screw: No. 2 x 3/8 PKF Phillips Oval Head
2	47A691424	Shaft, Slide Release Hinge			
3	41A691463	Spring, Retainer	22	15C691393	Cover, Housing
4	7B691418	Bracket, Slide Release Hinge	22A	15D691488	Record Support Housing
5	3S490352	Screw, Machine - 2-56 x 5/32 Slotted Binderhead	23	3S2286	Lockscrew: 4-40 x 3/16 Slotted Hex Head Machine Screw
6	15C691395	Cover Slide			
7	41A691467	Spring, Extension	24	3S490535	Screw, Machine - 4-40 x 5/16 Phillips Flat Head
8	3S6932	Screw, Machine - 4-40 x 3/16 Slotted Locking Type Binderhead	25	45D691428	Arm, Pickup - Arm Only
				1X691817	Pickup Arm Assembly - Complete
9	64B691342	Plate, Record Rest Cover			
10	42A691405	Clip, Ball Bearing	26	1X691819	Pickup Arm Plate and Bushing Assembly
11	43K471634	Ball, Steel			
12	4K73809	Washer, "C"	27	41A691329	Spring, Torsion
13	4S8279	Washer, Flat - 5/16 x .125 x .027	28	1X691815	Pickup Arm Bracket and Stud Assembly
14	41A691466	Spring, Coil	29	47A691221	Shaft, Pickup Arm
15	1X691826	Push-Off Link and Bushing Assembly	30	46C691431	Counterbalance
			31	3S1452	Screw, Machine - 4-40 x 1/2 Slotted Binderhead
16	1X691824	Record Support and Clamp Assembly: Complete	32	3S490739	Screw - No. 4 x 1/4 PKZ Phillips Binderhead
17	46A691235	Stud, Slide Locking			
18	47K691953	Lever, Record Push-Off	33	59B691430	Cartridge, Crystal - With Needle (Shure)
19	1X691820	Record Support Housing Assembly: Complete with Push-Off Lever and Gears		59K691907	Cartridge, Crystal - With Needle (Electro-Voice)
20	3S7350	Lockscrew: 6-32 x 1/4 - Slotted Hex Head Machine Screw		59K691908	Needle (for 59B691430 Cartridge)
				59K691909	Needle (for 59K691907

PARTS LIST (Cont'd.)

Ref. No.	Part No.	Description
		Cartridge)
34	42A691429	Clip, Cartridge Retainer
35	1X691832	Spindle, Record - 45 RPM, Complete
36	3S490533	Lockscrew - 6-32 x 1/4 Phillips Binderhead Machine Screw
37	1X691978	Turntable Assembly
38	3A691225	Screw, Drive Dog Adjusting
39	2S7003	Nut, Hex - 8-32 x 5/16
40	1X691829	Baseplate
41	3S7205	Lockscrew - 8-32 x 1/4 Slotted Hex Head Machine
42	36B691483	Knob, Control
43	3S2963	Screw, Machine 8-32 x 1-3/4"
44	1X691962	Set-Down Flag and Arm Mounting Assembly: Complete
45	5A790684	Grommet, Rubber
46		Spring
47		Slide Pin
48		Set-Down Flag
49	46C691368	Block, Guide Slide
50	1X691813	Set-Down Cam and Gear Assembly
51	1X691816	Set-Down Arm Assembly
52	46C691368	Block, Guide Slide
53	1X691804	Slide Channel Assembly: Complete
54	41A14244	Spring, Tension Coil
55		Clutch Fingers
56	41A691469	Spring, Trip Lever Arm Actuating
57		Trip Arm
58	1X691827	Drive Clutch Lever and Weight Assembly
59	45B691361	Arm, Manual Reject
60	47A691464	Rod, Reject
61	44B691354	Gear, Drive
62	1X691803	Cycle Gear, Shaft and Roller Assembly
63	43A691278	Bearing, Turntable
64	4A691286	Washer, Bearing
65	1X691830	Reject Lever and Shaft Assembly
66	2A691432	Nut, Speed
67	4A11722	Washer, "C"
68	1X691966	Speed Control-Turret Assembly
69	42A691893	Clip, Hairpin
70	4A691891	Washer, Insulating: Rubber
71	41A691280	Spring, Pawl Extension
72	49A691277	Wheel, Idler
73	44A691219	Gear, Speed Change
74	1X691965	Speed Change Shaft Assembly
75	3A691237	Screw, Motor Mounting
76	1X691967	Idler Wheel Bracket Assembly
77	41A691281	Spring, Idler Extension
78	44A691219	Gear, Speed Change
79	45A691223	Pawl, Speed Detent
80	4A691214	Washer, Turret Spring: Phosphor Bronze
81	3S490530	Screw, Machine - 3-48 x 3/16 Slotted Round Head
82	43A17431	Bushing, Collar: Brass
83	3S7113	Setscrew - 3-32 x 1/4 Slab Head
84	41A691284	Spring, Motor Extension
85	59C691379	Motor
86	41A691489	Spring, Manual Reject
87	45A691256	Cam, Record Drop (45 RPM)
88	4S7569	Washer, Flat - 5/16 x .145 x .027
89	3S7247	Lockscrew - 6-32 x 3/16 - Slotted Hex Head Machine Screw
90	1X691843	Reject Plate and Roller Assembly
91	46A691309	Stop, Timing
92	42A691462	Clip
93	41A76925	Spring, Coil Tension
94	1X691836	Center Post Cap and Spring Assembly
95	41A691253	Spring, Spindle Cap
96	3S7164	Screw, Machine - 6-32 x 1/4 Slotted Binderhead
97	41A691406	Spring, Compression
98	1X691835	Record Support and Separator Assembly
99	42A691283	Clip, Shaft
100	1X691834	Drive Gear and Shaft Assembly
101	4S7666	Lockwasher - No. 6 External
102	3S488082	Screw, Machine - 6-32 x 1-3/4" Slotted Round Head
103	41A691258	Spring, Set-Down Flag Detent

PARTS LIST
MOTOROLA RC-36A

106	1X600757	Slide Channel Assembly Complete: Includes Items 56, 54, and 107
107	1B600748	Trip Flag and Trip Rod Assembly
108	1B600752	Set-Down Arm and Trip Arm Assembly
	41A600856	Clutch Spring
109	1X600761	Set-Down Flag and Pickup Arm Mounting Assembly: Complete - Includes Items 46, 50, and 110
110	41A600766	Spring, Set-Down Flag Detent
111	1X600895	Slide Guide Block
112	1X600773	Turntable Assembly - Complete: Includes Items 38, 39, and the Following Parts not shown -
	7A600745	Wiper Bracket
	37K600771	Plastic Sleeve for Wiper Bracket
	4S7651	Internal Lockwasher No. 8

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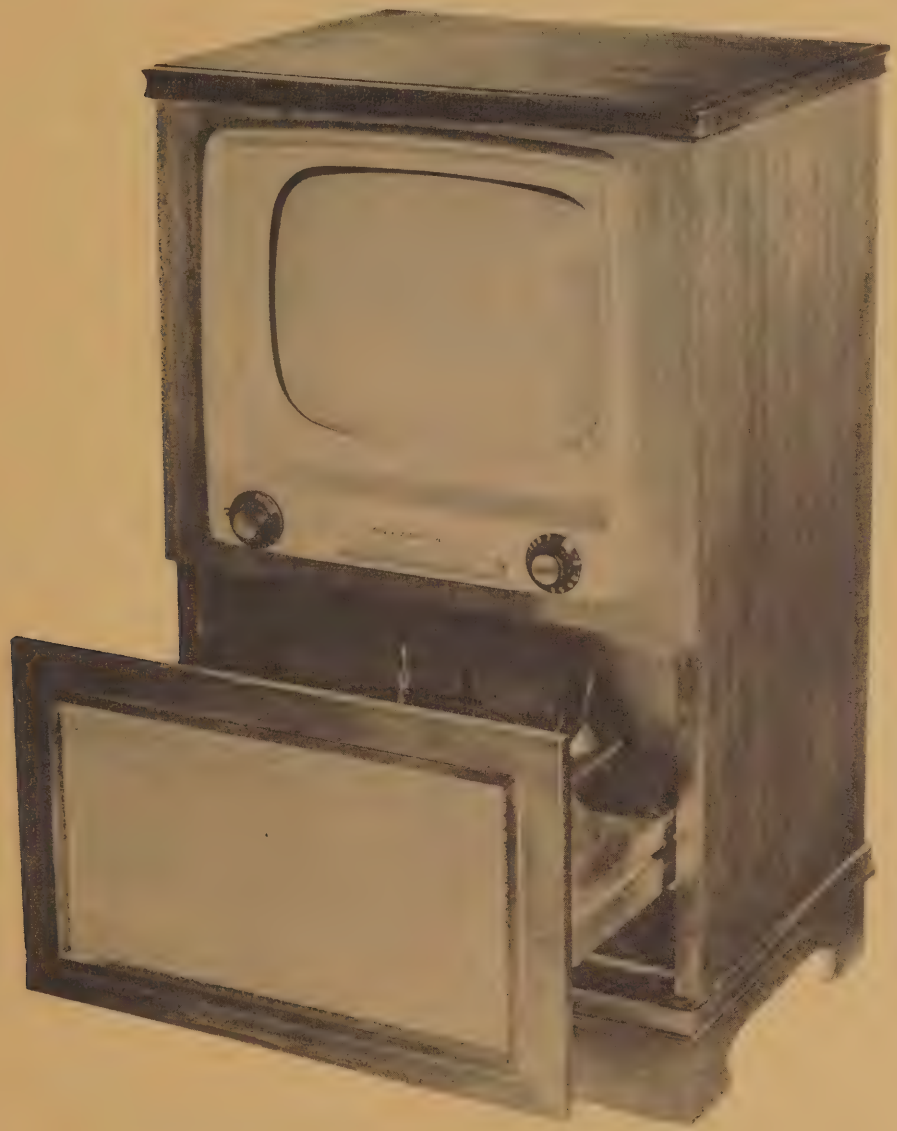

RAYTHEON MODEL
RC-1720A (Ch. 12AY27)

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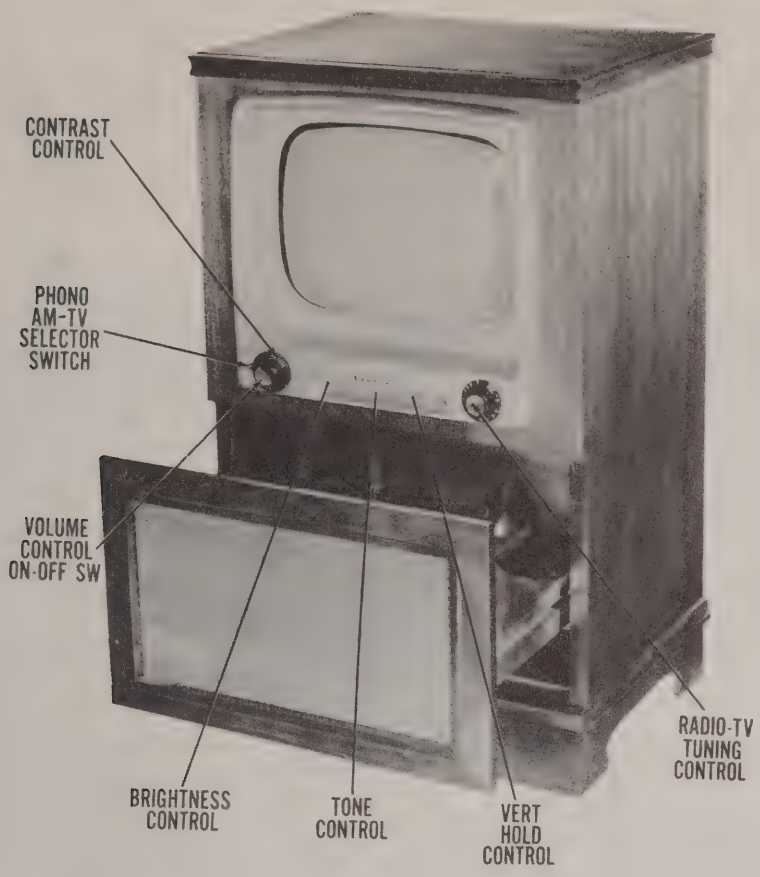

TRADE NAME	Raytheon Model RC-1720A (Ch. 17AY27)
MANUFACTURER	Belmont Radio Corp., 5921 W. Dickens Ave., Chicago 39, Ill.
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty four
POWER SUPPLY	110-115 Volts AC-60 Cycle
RATING	(TV) 1.9 Amp. at 115 Volts AC (RADIO) 1.6 Amp. at 115 Volts AC
TUNING RANGE—	(TV) Channels 2 thru 13 (AM) 540-1600KC

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RAYTHEON MODEL
RC-1720A (Ch. 17AY27)

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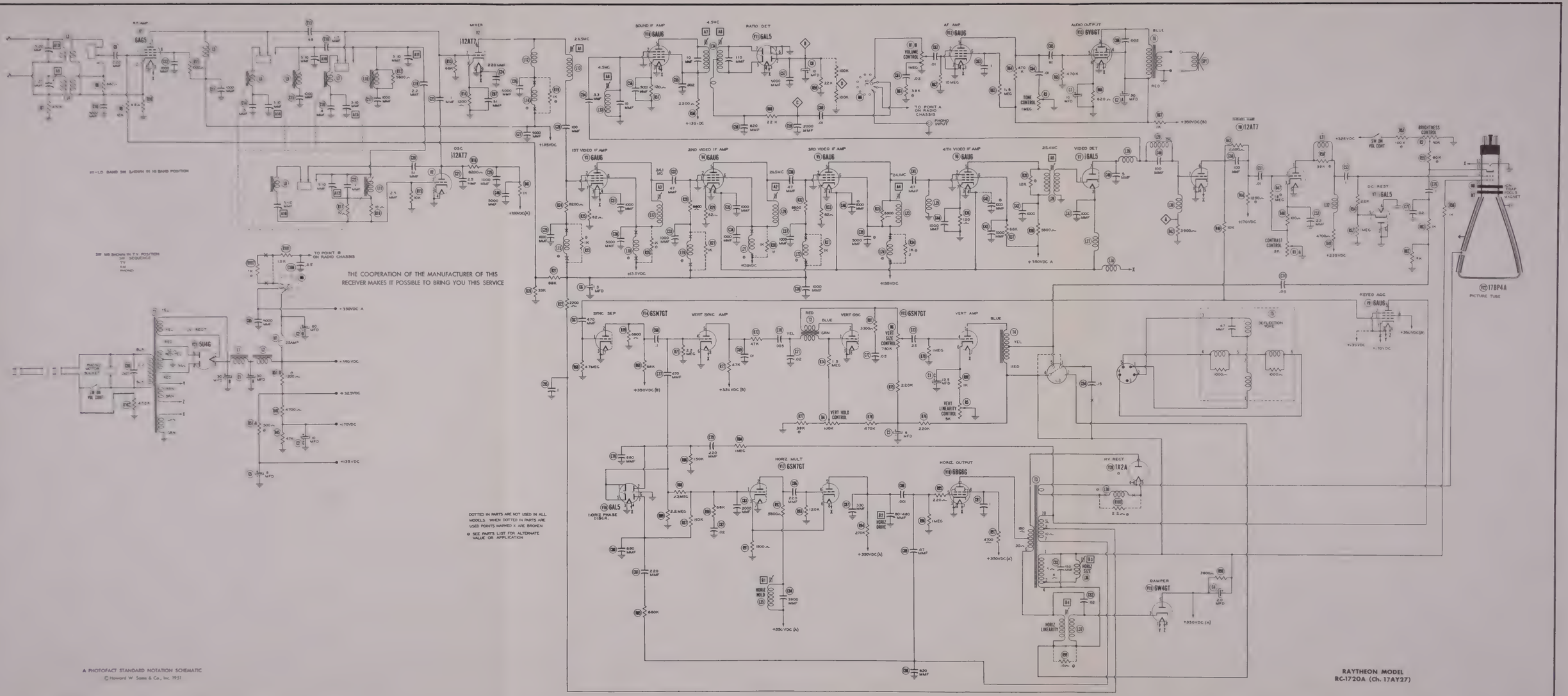

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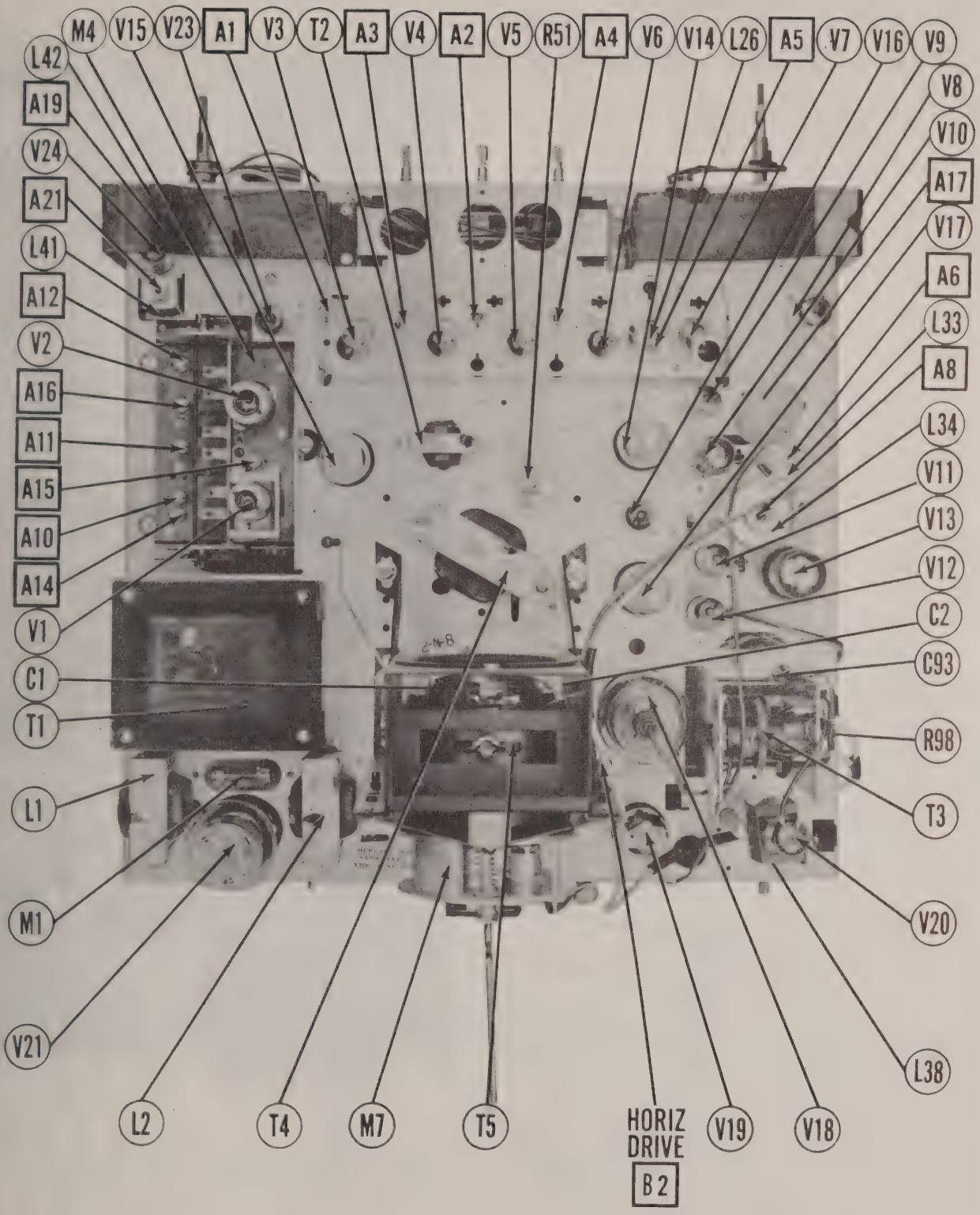
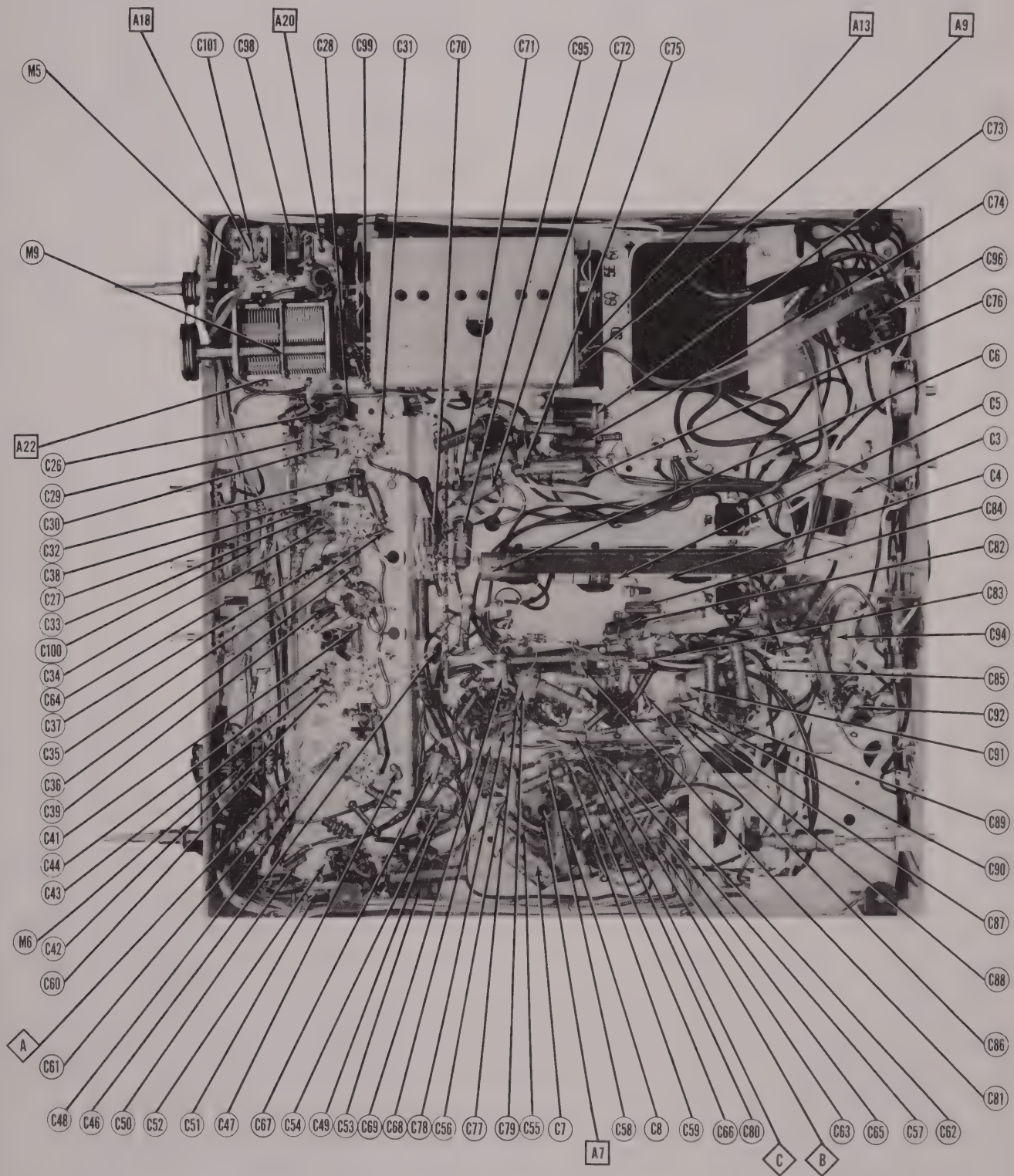
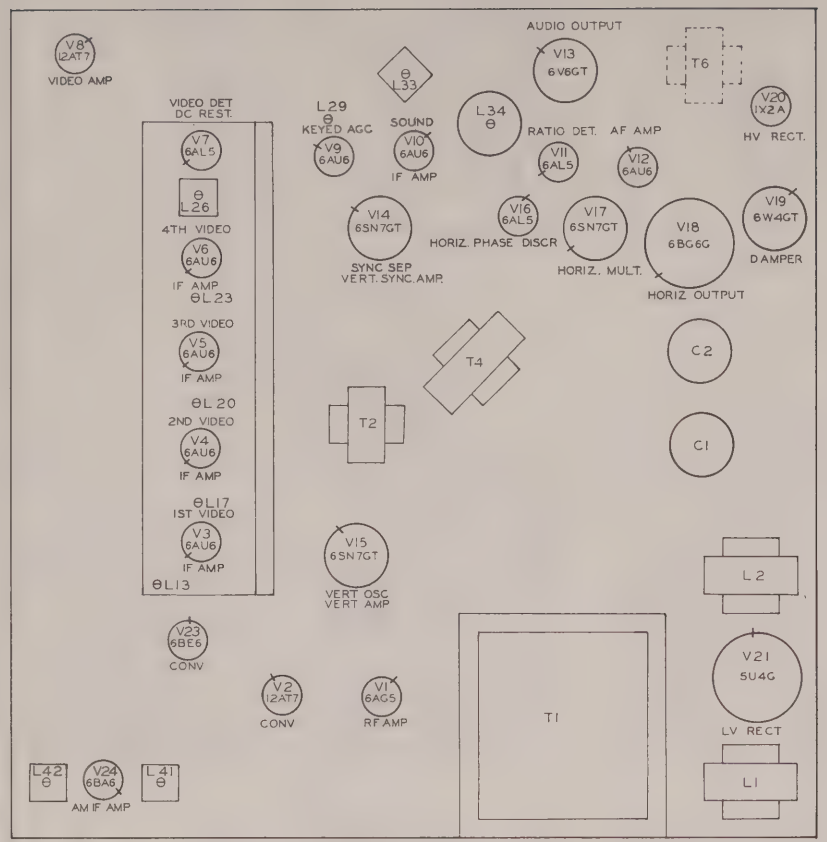


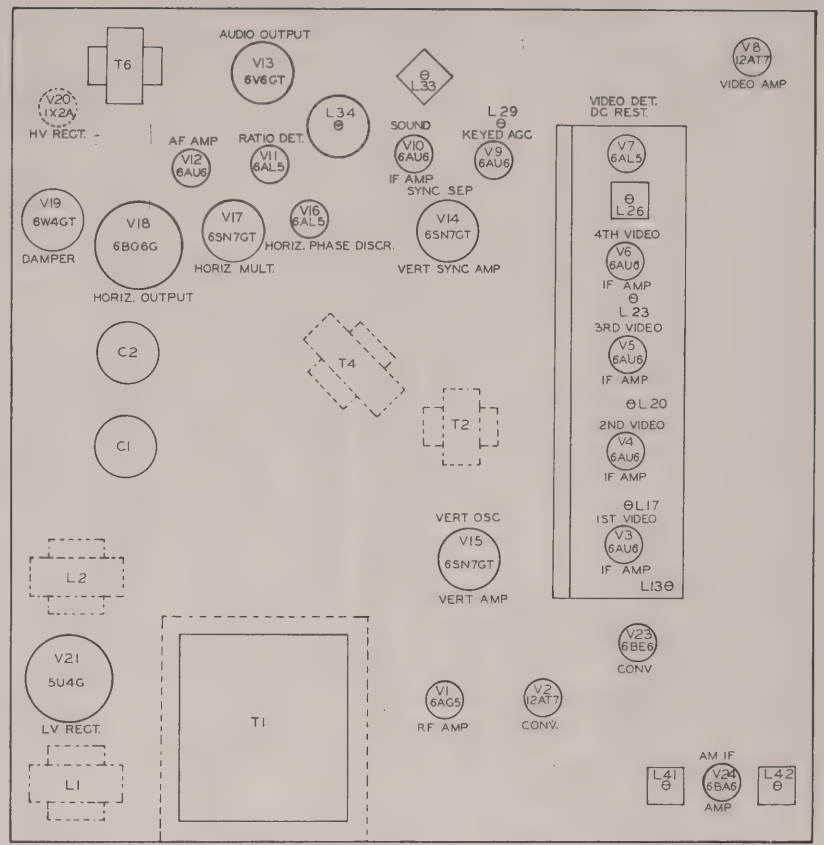
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

RAYTHEON MODEL RC-1720A (Ch. 17AV27)

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 12AT7 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect a 1000MMF capacitor across the oscilloscope vertical input terminals and a 10KΩ resistor in series with the vertical input lead.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	1000MMF	High side to pin 7, (grid) of 12AT7, (V2). Low side to chassis.	Not used.	26.5MC (Unmod.)	Any	USE VTVM DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 1 volt above no signal noise.
2.	"	"	"	24.1MC	"	"	A3, A4	"
3.	"	"	"	25.4MC	"	"	A5	"
4.	"	"	25MC (10MC SWP)	23.75MC 26.75MC	"	Vert. Amp. to point (A). Low side to chassis.	A5	Adjust for response curve similar to fig. 1 with marker as shown.
5.	With the sweep generator connected as in step 4, and the VTVM connected as in step 1, adjust the marker generator until the marker reaches the peak. Record the VTVM reading, keeping generator output constant. Adjust marker generator until the marker reaches the shoulder on the curve. Record the VTVM reading. The ratio between the two readings should be between 1.4 and 1.6, if not repeat entire alignment.							

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from point B to chassis. The junction of these two resistors is alignment point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	1000MMF	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	1000MMF	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C8. Adjust A8 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original 12AT7 in its socket.
Pre-set the trimmer screws as shown in figure 5.
Turn the tuner to the top of its stroke in the low band position.
Pre-set all coil tuning cores so the cores projects 1.6" above the coil mounting strip.
Turn the core of L11, (Low band oscillator), an additional 4 turns out of the coil.

LOW BAND ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave the RF filter, used during video IF alignment, connected to the scope lead.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC	6	Vert. amp. to point (A). Low side to chassis.	A9, A10, A11	Adjust for maximum amplitude of response curve.
9.	"	"	"	"	"	"	A12	Adjust to place video marker as shown in fig. 4
10	"	"	79MC (10MC SWP)	77.25MC	5	"		Check all low band channels for response similar to fig. 4. If necessary retouch A10 and A11 for compromise adjustment which will give best response across the low band channels. If trimmer A9 reaches maximum cap capacity, turn core of L9 into coil.
			69MC (10MC SWP)	67.25MC	4			
			63MC (10MC SWP)	61.25MC	3			
			57MC (10MC SWP)	55.25MC	2			

HIGH BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC	13	Vert. amp. to point (A). Low side to chassis.	A13, A14, A15	Adjust for maximum amplitude of response curve.
12.	"	"	"	"	"	"	A16	Adjust to place video marker as shown in fig. 4. If necessary repeat step 11.
13.	"	"	207MC (10MC SWP)	205.25MC	12	"		Check all high band channels for response similar to fig. 4. If necessary retouch A14, and A15 for compromise adjustment which will give best response across the high band channels.
			201MC (10MC SWP)	199.25MC	11			
			195MC (10MC SWP)	193.25MC	10			
			189MC (10MC SWP)	187.25MC	9			
			183MC (10MC SWP)	181.25MC	8			
			177MC (10MC SWP)	175.25MC	7			

4.5MC TRAP ADJUSTMENT

After alignment is completed and set is returned to original operation, tune in a TV station and adjust the tuning until sound just begins to appear in the picture. Adjust A17 to remove any indication of 4.5MC beat interference. If adjustment of A17 will not completely eliminate the interference, try a slight retouching of A6.

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT							
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.							
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.1MFD	High side to pin 7, (grid) of 6BE6, (V23). Low side to chassis.	455KC (400∿Mod.)		Tuning gang fully open.	Across voice coil	A17, A18, A19, A20	Adjust for maximum output.
15.	"	"	1620KC		"	"	A21	"
16.		Loop	1400KC		Tune for maximum output.	"	A22	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

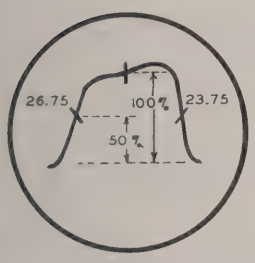


FIG. 1

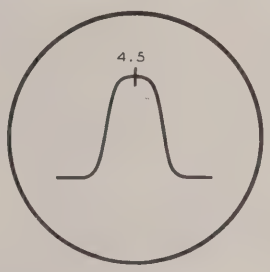


FIG. 2

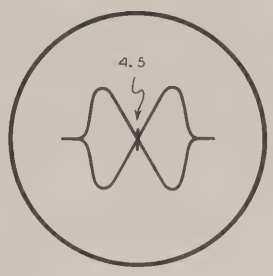


FIG. 3

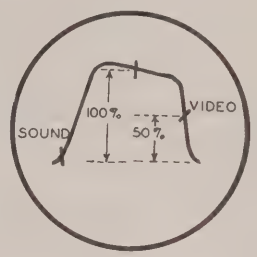
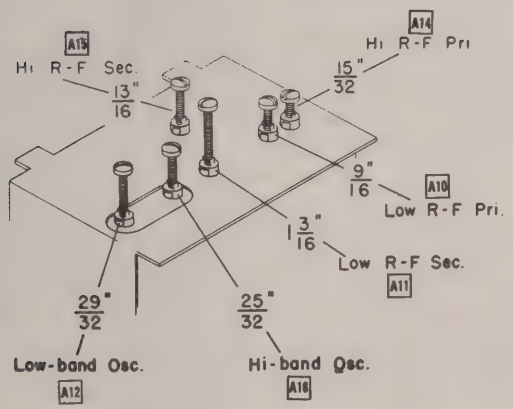


FIG. 4



ALIGNING TRIMMERS

The dimensions shown are approx. from the shoulder of screw head to mounting base

FIG. 5

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

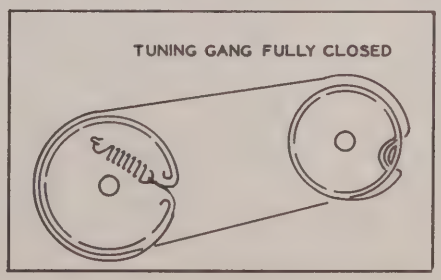
Turn the set on and tune in a TV station preferably a test pattern.
Adjust the horizontal hold thumbscrew until the picture synchronizes horizontally. If the thumbscrew shows insufficient range, turn it to the center of its range and adjust the coil slug, (B1), until the picture synchronizes.
Adjust the horizontal drive trimmer, (B2), counter-clockwise until bright vertical lines appear in the picture, then turn clockwise to 1/4 turn past the point where the vertical lines just disappear.
Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove two screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect phono power plug.
5. Disconnect phono audio jack.
6. Disconnect speaker.
7. Disconnect AM loop.
8. Remove four 3/32" hex head bolts from chassis. Remove chassis.
9. Remove two phillips head screws from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

DIAL CORD STRINGING



VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.1VDC	.7VDC	6.3VAC	0V	140VDC	135VDC	.7VDC		
V 2	12AT7	260VDC	§-7.8VDC	0V	0V	0V	135VDC	0V	3.8VDC	6.3VAC
V 3	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	1.2VDC		
V 4	6AU6	0V	0V	0V	6.2VAC	135VDC	135VDC	1.2VDC		
V 5	6AU6	0V	0V	0V	6.2VAC	135VDC	135VDC	1.2VDC		
V 6	6AU6	0V	0V	0V	6.2VAC	320VDC	130VDC	1.4VDC		
V 7	6AL5	0V	0V	6.1VAC	0V	1.3VDC	0V	-.6VDC		
V 8	12AT7	190VDC	.9VDC	42VDC	0V	0V	135VDC	-.4VDC	0V	6.3VAC
V 9	6AU6	130VDC	170VDC	¶0V	¶6.3VAC	-.3VDC	350VDC	170VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	1.2VDC		
V 11	6AL5	0V	-.5VDC	6.3VAC	0V	-.3VDC	0V	-.3VDC		
V 12	6AU6	-.5VDC	0V	6.3VAC	0V	125VDC	27VDC	0V		
V 13	6V6GT	0V	0V	325VDC	325VDC	0V	350VDC	6.3VAC	24VDC	
V 14	6SN7GT	-3.7VDC	30VDC	0V	-1.1VDC	80VDC	0V	0V	6.3VAC	
V 15	6SN7GT	§-4VDC §-27VDC	100VDC	0V	§0V §-1.8VDC	440VDC 460VDC	16VDC 24VDC	6.3VAC	0V	
V 16	6AL5	2VDC	-.4VDC	0V	6.3VAC	2VDC	0V	-.4VDC		
V 17	6SN7GT	§-.5VDC	315VDC	12.5VDC	§-5.3VDC	130VDC	12.5VDC	0V	6.3VAC	
V 18	6BG6GT	0V	0V	0V	-26VDC	-26VDC	0V	6.3VAC	290VDC	Top Cap *
V 19	6W4GT	0V	0V	475VDC	475VDC	350VDC	475VDC	¶6.3VAC	¶0V	
V 20	1X2A	* DO NOT MEASURE.								Top Cap *
V 21	5U4G	0V	360VDC	0V	340VAC	1.2VAC	340VAC	48VAC	360VDC	
V 22	17BP4A	0V	1.5VDC	Pin 10 460VDC	Pin 11 0V 95VDC	Pin 12 6.3VAC	H.V. Connector ** 9KV			
V 23	6BE6	▲§-5.3VDC	0V	0V	6.3VAC	▲95VDC	▲95VDC	0V		
V 24	6BA6	▲.1VDC	0V	0V	6.3VAC	▲95VDC	▲95VDC	▲.2VDC		

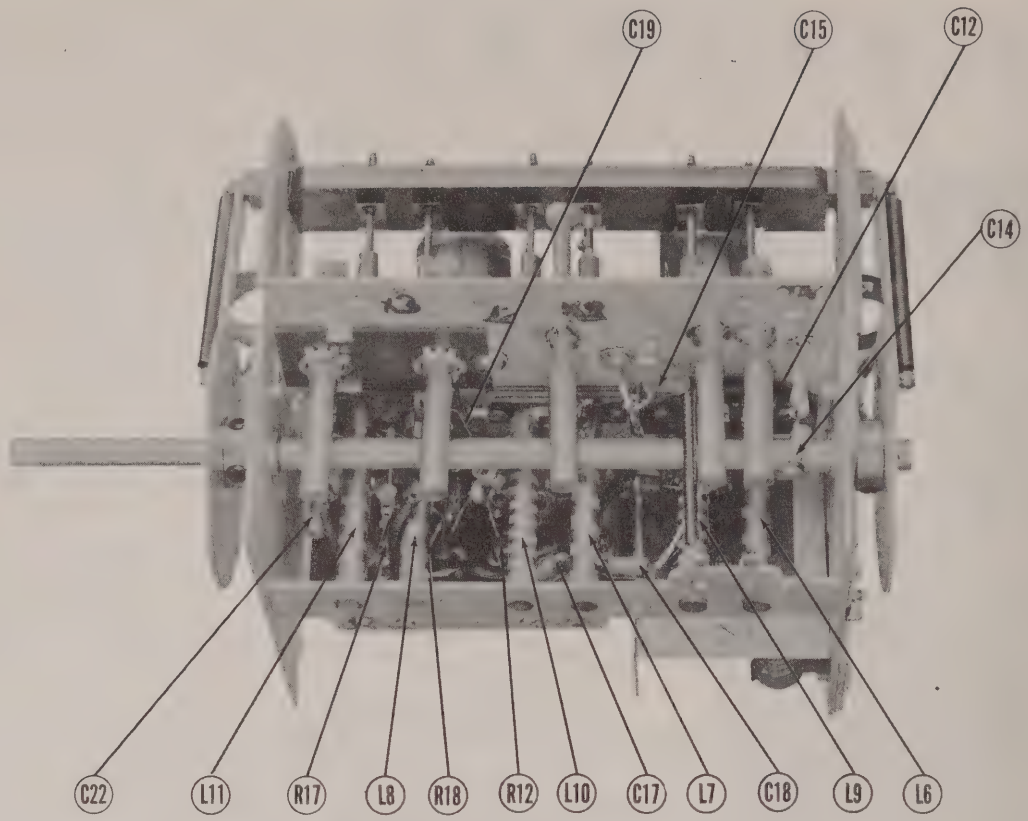
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED.
¶ MEASURE FROM 170VDC LINE.
* DO NOT MEASURE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE.
▲ MEASURED IN AM RADIO POSITION.

RESISTANCE READINGS

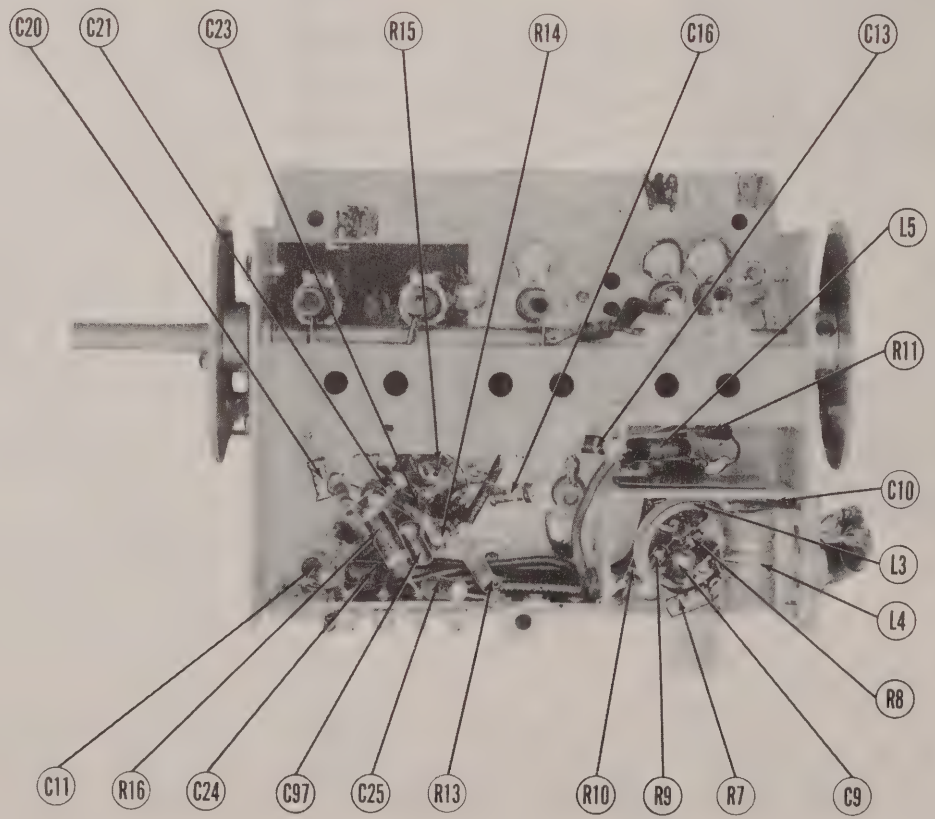
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.7KΩ	†3.7KΩ	68Ω		
V 2	12AT7	†9.2KΩ	10KΩ	0Ω	0Ω	0Ω	†2.7KΩ	68KΩ	1.2KΩ	.1Ω
V 3	6AU6	110KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 4	6AU6	105KΩ	0Ω	0Ω	.2Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 5	6AU6	105KΩ	0Ω	0Ω	.2Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 6	6AU6	2.5Ω	0Ω	0Ω	.2Ω	†5.6KΩ	†68KΩ	120Ω		
V 7	6AL5	.8Ω	0Ω	.3Ω	0Ω	1Meg	0Ω	3.9KΩ		
V 8	12AT7	†6KΩ	1.6Meg	5.1KΩ	0Ω	0Ω	†8KΩ	3.9KΩ	0Ω	.1Ω
V 9	6AU6	†20KΩ	†6KΩ	¶0Ω	¶.1Ω	100KΩ	†78Ω	†6KΩ		
V 10	6AU6	2.6Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	120Ω		
V 11	6AL5	0Ω	22KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 12	6AU6	10Meg	0Ω	.1Ω	0Ω	†470KΩ	†1.8Meg	0Ω		
V 13	6V6GT	0Ω	0Ω	†1.5KΩ	†1KΩ	470KΩ	†78Ω	.1Ω	820Ω	
V 14	6SN7GT	4.7Meg	†22KΩ	0Ω	2.2Meg	†47KΩ	0Ω	0Ω	.1Ω	
V 15	6SN7GT	1.6Meg 1.5Meg	#1.2Meg	0Ω	1Meg	#700Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 16	6AL5	2.2Meg	150KΩ	0Ω	.1Ω	2.2Meg	0Ω	4.5Meg		
V 17	6SN7GT	4.4Meg	†5.7KΩ	1.5KΩ	120KΩ	†270KΩ	1.5KΩ	0Ω	.1Ω	
V 18	6BG6G	Inf.	0Ω	0Ω	1Meg	1Meg	100KΩ	.1Ω	†4.7KΩ	Top Cap #35Ω
V 19	6W4GT	Inf.	Inf.	†3.6KΩ	†3.6KΩ	†78Ω	†3.6KΩ	¶.1Ω	¶0Ω	
V 20	1X2A	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #215Ω
V 21	5U4G	Inf.	25KΩ	Inf.	34Ω	470KΩ	32Ω	470KΩ	25KΩ	
V 22	17BP4A	0Ω	1Meg	Pin 10 †4.7KΩ	Pin 11 †130KΩ †90KΩ	Pin 12 .1Ω				
V 23	6BE6	47KΩ	.8Ω	0Ω	.1Ω	▲†13KΩ	▲†13KΩ	2.2Meg		
V 24	6BA6	2.2Meg	0Ω	0Ω	.1Ω	▲†13KΩ	▲†13KΩ	180Ω		

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED.
† MEASURED FROM PIN 8 OF V21.
# MEASURED FROM PIN 3 OF V19.
▲ MEASURED IN AM RADIO POSITION.
¶ MEASURED FROM 170VDC LINE.

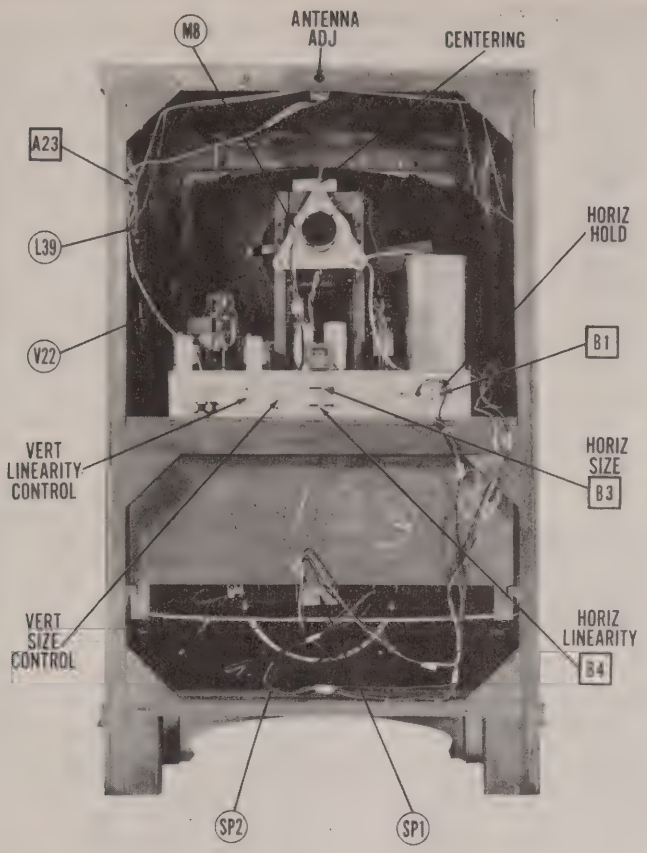
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



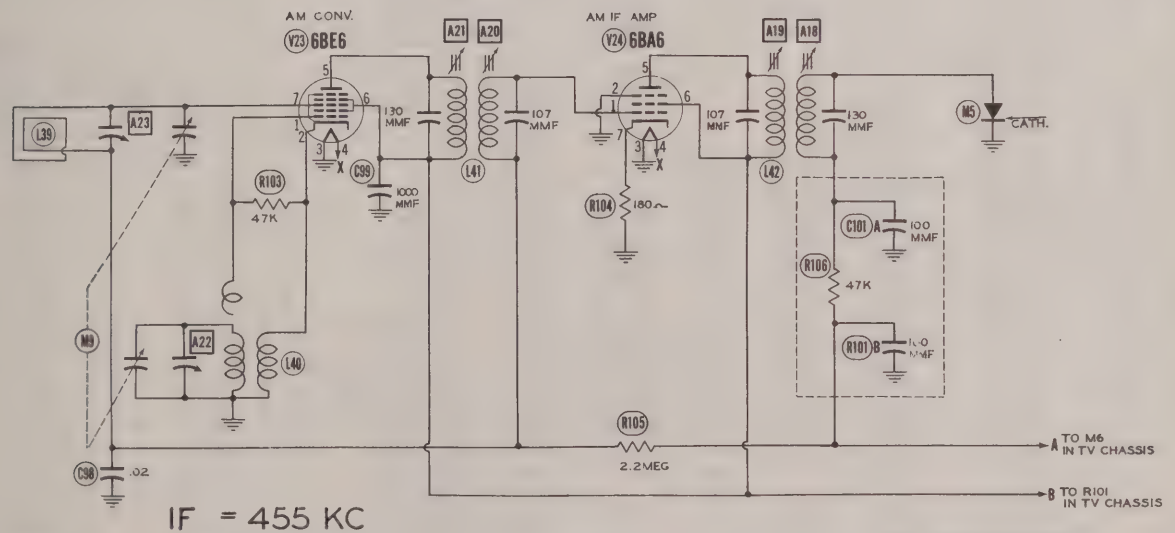
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW



IF = 455 KC

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RAYTHEON MODEL
RC-1720A (Ch. 12AY27)

AM TUNER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V8	Video Amplifier	12AT7	12AT7	9A	
V9	Keyed AGC	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier	6AU6	6AU6	7BK	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync. Separator-Vert. Sync. Amp.	6SN7GT	6SN7GT	8BD	
V15	Vert. Oscillator-Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V16	Horizontal Phase Discriminator	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G		
V19	Damper	6W4GT	6W4GT	4CG	
V20A	HV Rectifier	1X2A	1X2A	7CB	
B	HV Rectifier	1X2	1X2	7CB	
V21	LV Rectifier	5U4G	5U4G	5T	
V23	AM Converter	6BE6	6BE6	7CH	
V24	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: BELMONT PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V22	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	8C-18487	APH4-105		UPT4U9		TVL-2759	▲ Filter
B	30	450						TVA-1207	■ Filter
C	125	25							▲ Vert. Amp. Cathode
C2A	30	450	8C-17845	AFH 3-40		UPT36145		TVL-3780	▲ Audio Output Dec.
B	60	450							■ Filter
C	10	450							▲ Decoupling
C3	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Vert. Amp. Dec.
C4	20	150	8C-19546	PRS150/20		BR2015A		TVA-1410	Accelerating Anode Dec.
C5	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C6	5	50	8C-19424	PRS50/4		BR50J		TVA-1303	AGC Filter
C7	10	50	8C-17183	PRS50/10		BR10S		TVA-1304	Audio Output Cathode
C8	10	75	8C-19564	PRS15-/12		BR10I5		TVA-1406	Stabilizing Cap.
C9	220		8C-16045	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	5000		8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Plate
C12	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C13	68		8G-12495-1		TCZ-.68		NPOK-R68		RF Coupling
C14	15		8G-13017		TCZ-15		NPOK-150		Fixed Trimmer
C15	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Trimmer
C16	4		8G-19314				NPOK-040		Fixed Trimmer
C17	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Trimmer
C18	1.5		8G-12495-8	SII.5NPO	TCZ-1.5		NPOK-1R5		RF Coupling
C19	2.2		8G-12495-4		TCZ-2.2		NPOK-2R2		Osc. Coupling
C20	51		8G-11891		TCN-51		N750K-510		Osc. Feedback
C21	2.5		8G-19568				NU80-331-2R5		Fixed Trimmer
C22	~		8G-19572						Fixed Trimmer
C23	1		8G-12495-2		TCZ-1		NPOK-010		Osc. Coupling
C24	220		8G-16045	SI220	D6-221		GP2K-221	5GA-T22	Conv. Fil.
C25	1000		8G-3201	SI1000	D6-102		GP2L-102	5HK-D1	Osc. Plate Dec.
C26	5000		8G-13962	BPD-005	DD-502		811-005	5HK-D5	Mixer Plate Dec.
C27	5,000		8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C28	1000	500	8F3-8	1468-0001	D6-101		GP1K-101	1FM-31	IF Coupling
C29	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C30	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Video IF Dec.
C31	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Fil.
C32	47	500	8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C33	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C34	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Dec.
C35	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Fil.
C36	47	500	8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C37	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C38	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C39	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd Video IF Dec. †
C40	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd Video IF Fil. *
C41	47	500	8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C42	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th Video IF Plate
C43	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th Video IF Screen
C44	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th Video IF Cathode
C45	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th Video IF Fil. *
C46	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C47	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C48	5		8G-122186	SI5NPO	TCZ-4.7		NPOK-050		Video Det. Filter
C49	100	500	8F1-113	1469-0001		5R5T1		MS-31	Fixed Trimmer
C50	100	500	8F1-113	1469-0001		5R5T1		MS-31	Peaking Cap.
C51	01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C52	22		8G-11892		TCN-22			5TCV-Q22	Video Amp. Cathode
C53	1	600	8D-18861	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C54	3 3			SI3.3NPO	TCZ-3.3		NPOK-3R3		Sound IF Coupling
C55	962	600	8D-15638	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Sound IF Decoupling
C56	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C57	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C58	82	500	8F3-124						Diode Load Cap.
C59	2000		8G-19522	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-Emphasis
C60	01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C62	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C63	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Screen
C64	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C65	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.005	600	8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C67	470	500	8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Sync. Coupling
C68	.1	200	8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sync. Amp. Plate
C70	.005	400	8D-17608	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Sync. Coupling
C71	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Vert. Integrator Net.
C72	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharger
C73	.25	600	8D-17784	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C74	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Sweep Coupling
C75	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Integrator Net.
C76	.1	400	8D-18861	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C77	470	500	8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync. Coupling
C78	680	500	8F3-123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Voltage Divider
C79	220	500	8F3-117	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Horiz. Feedback
C80	680	500	8F3-123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Voltage Divider
C81	220	500	8F3-117	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Horiz. Feedback
C82	.02	200	8D-17268	P488-.2	DF-203	PTE4S2		2TM-S2	AFC Filter
C83	2000		8G-16049	SI200	D6-202	1W5D2	GP2-333-202	5HK-D2	AFC Filter
C84	3900	500	8F11-133	1464-004		1DR5D4			Fixed Trimmer
C85	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C86	220	500	8F3-117	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Horiz. MV Feedback
C87	330	500		1468-00035	D6-331		GP2K-331	1FM-335	Horiz. Discharge †
C88	.001	600	8D-19193	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C89	47		8G-12198	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Horiz. Feedback
C90	820	500	8F3-124						Voltage Divider ¶
C91	.1	600	8D-18861	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C92	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Fixed Trimmer
C93	150	1500	8G-19498						Fixed Trimmer
C94	.15	200	8D-15667	P288-15				2TM-P15	Horiz. Sweep Coupling *
C95	.1	200	8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C96	.047	400	8J-16081	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C97	51		8G-11891		TCN-51		N750K-510		Conv. Cathode
C98	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	AVC Filter
C99	1000		8G-13201	SI1000	D6-102	1W5D15	GP2L-102	5HK-D1	Osc. Anode
C100	.25	400	8D-17784	P488-25		GT4P25		4TM-P25	Decoupling
C101	100		♦201-15005	SI100	♦PC-50	5W5T1	GP1K-101	♦100C1	Det. RF Filter
	100					5W5T1	GP1K-101		Det. RF Filter

* Not used in all models.
† Some models use 1000 MMF in this application.
♭ Some models use 750 MMF in this application.
¶ Some models use 470 MMF in this application.
♦ Items C101A, C101B, R106 are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	1/2	A-10A-18441		RTV-218	SBBT-617-S	Contrast Control-Front
B	1Meg						Volume Control and SW-Tapped @ 100KΩ-Rear
R2A	50KΩ	1/2	A-10B-17764	QII-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A Per Instructions
R3A	1Meg	1/2	A-10B-19542	QI3-127	AG-63-Z	BSK-70	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R3A Per Instructions
R4A	100KΩ	1/2	A-10B-17275	QII-128	AG-49-S	AN-40	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R4A Per Instructions
R5A	500Ω	1/2	A-10B-19218	QII-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A Per Instructions
R6A	750KΩ	1/2	A-10B-19220		AG-61-S	AN-69	Vert. Size Control
B	Shaft		Not Req.		FKS-1/4	AK-1	Attach to R6A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R7	470KΩ 20%	1/2		BTS-750K	Antenna Isolation
R8	68Ω 20%	1/2	9BI-80	BTS-680	Antenna Isolation
R9	10KΩ	1/2	9BI-74	BTS-10K	RF Amp. Grid
R10	68Ω 20%	1/2	9BI-48		RF Amp. Cathode
R11	1000Ω 20%	1/2	9BI-13	BTS-1000	RF Amp. Screen
R12	560Ω	1/2	9BI-71		Mixer Grid Coil Shunt
R13	68KΩ	1/2	9BI-84	BTS-68K	Mixer Grid
R14	120Ω	1/2	9BI-63	BTS-120	Mixer Cathode
R15	10KΩ	1/2	9BI-74	BTS-10K	Osc. Grid
R16	8200Ω	1	9B2-73	BTA-8200	Osc. Plate
R17	10Ω	1/2	9BI-38		Parasitic Suppressor
R18	10Ω	1/2	9BI-38		Parasitic Suppressor
R19	1000Ω	1/2	9BI-13	BTS-1000	Decoupling-See Note 2
R20	33KΩ	1/2	9BI-80	BTS-33K	AGC Network
R21	68KΩ	1/2	9BI-84	BTS-68K	AGC Network
R22	2200Ω	1/2	9BI-66	BTS-2200	AGC Network
R23	1000Ω	1/2	9BI-13	BTS-1000	AGC Network-See Note 2
R24	8200Ω	1/2	9BI-73	BTS-8200	1st Video IF Amp. Grid
R25	82Ω	1/2	9BI-49	BTS-82	1st Video IF Amp. Cathode
R26	1000Ω	1/2	9BI-13	BTS-1000	1st Video IF Amp. Decoupling-See Note 2
R27	1000Ω	1/2	9BI-13	BTS-1000	AGC Network-See Note 2
R28	6800Ω 20%	1/2	9BI-72	BTS-6800	2nd Video IF Amp. Grid
R29	82Ω	1/2	9BI-49	BTS-82	2nd Video IF Amp. Cathode
R30	1000Ω	1/2	9BI-13	BTS-1000	2nd Video IF Amp. Decoupling-See Note 2
R31	1000Ω	1/2	9BI-13	BTS-1000	AGC Network-See Note 2
R32	6800Ω 20%	1/2	9BI-72	BTS-6800	3rd Video IF Amp. Grid
R33	82Ω	1/2	9BI-49	BTS-82	3rd Video IF Amp. Cathode
R34	1000Ω	1/2	9BI-13	BTS-1000	3rd Video IF Amp. Decoupling-See Note 2
R35	6800Ω	1/2	9BI-72	BTS-6800	4th Video IF Transformer Shunt
R36	120Ω	1/2	9BI-51	BTS-120	4th Video IF Amp. Cathode
R37	68KΩ	1	9B2-84	BTA-68K	4th Video IF Amp. Screen
R38	5600Ω	1/2	9BI-71	BTS-5600	4th Video IF Amp. Plate Decoupling
R39	12KΩ	1/2	9BI-75	BTS-2K	5th Video IF Transformer Shunt-See Note 3
R40	10KΩ	1/2	9BI-74	BTS-10K	Keyed AGC Grid
R41	1000Ω	1/2	9BI-13	BTS-1000	Decoupling
R42	3900Ω	1/2	9BI-69	BTS-3900	Video Det. Diode Load
R43	2200Ω	1/2	9BI-66	BTS-2200	Video Amp. Plate
R44	1250Ω	1/2		BTS-1200	Video Amp. Plate-See Note 4

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R45	47KΩ	2	9B4-82	BTB-47K	Voltage Divider
R46	4700Ω	1	9B2-70	BTA-4700	Decoupling
R47	1.6Meg	1/2		BTS-1.5Meg	Video Amp. Grid-See Note 8
R48	100Ω	1/2	9BI-50	BTS-100	Video Amp. Cathode
R49	4700Ω	2	9B4-70	BTB-4700	Video Amp. Plate
R50	39KΩ 20%	1/2		BTS-39K	Video Peaking Coil Shunt-See Note 5
R51A	1500Ω	10	9M-19995		Voltage Divider-Wire Wound } Note 10
B	1200Ω	10			Voltage Divider-Wire Wound ♪
R52	1Meg	1/2	9BI-98	BTS-1Meg	DC Restorer Diode Load
R53	100KΩ 20%	1/2		BTA-100K	Voltage Divider-See Note 7
R54	22KΩ	1/2	9BI-78	BTS-22K	Picture Tube Grid
R55	82KΩ	1/2		BTS-82K	Picture Tube Cathode-See Note 8
R56	1000Ω	1/2	9BI-62	BTS-1000	ACC Anode Load
R57	120Ω	1/2	9BI-51	BTS-120	Sound IF Amp. Cathode
R58	2200Ω	1/2	9BI-66	BTS-2200	Sound IF Amp. Decoupling
R59	22KΩ	1/2	9BI-78	BTS-22K	Ratio Det. Diode Load
R60	22KΩ	1/2	9BI-78	BTS-22K	De-Emphasis
R61	39KΩ 20%	1/2		BTS-39K	Tone Compensation-See Note 5
R62	10Meg	1/2	9BI-37	BTS-10Meg	AF Amp. Grid
R63	1.8Meg	1/2	9BI-101	BTS-1.8Meg	AF Amp. Screen
R64	470KΩ	1/2	9BI-29	BTS-470K	AF Amp. Plate
R65	470KΩ	1/2	9BI-29	BTS-470K	Output Grid
R66	820Ω	1	9B2-61	BTA-820	Output Cathode
R67	1000Ω	2	9B4-62	BW-2-1000	Decoupling-Wire Wound
R68	4.7Meg	1/2	9BI-106	BTS-4.7Meg	Sync. Sep. Grid
R69	68KΩ	2	9B4-84	BTB-68K	Sync. Sep. Plate
R70	680Ω	1/2	9BI-72	BTS-6800	Voltage Divider
R71	2.2Meg	1/2	9BI-102	BTS-2.2Meg	Vert. Sync. Amp. Grid
R72	47KΩ	2	9B4-82	BTB-47K	Vert. Sync. Amp. Plate
R73	47KΩ	1	9B2-82	BTA-47K	Integrator
R74	1.5Meg	1/2	9BI-100	BTS-1.5Meg	Vert. Osc. Grid
R75	22uKΩ	1/2	9BI-90	BTS-22K	Vert. Osc. Plate
R76	22uKΩ	1/2	9BI-90	BTS-22K	Vert. Osc. Decoupling
R77	39KΩ	1/2		BTS-39K	Voltage Divider-See Note 5
R78	470KΩ	1/2	9BI-29	BTS-470K	Voltage Divider
R79	1Meg	1/2	9BI-98	BTS-1Meg	Vert. Amp. Grid
R80	1000Ω	1	9B2-62	BTA-1000	Vert. Amp. Cathode
R81	330Ω	1/2	9BI-68	BTS-3300	Vert. Peaking
R82	15kΩ	1/2	9BI-76	BTS-15K	Vert. Retrace Blanking Network
R83	1000Ω	1	9BI-62	BTA-1000	Vert. Retrace Blanking Network
R84	1Meg	1/2	9BI-98	BTS-1Meg	Horiz. Feedback
R85	680KΩ	1/2	9BI-96	BTS-680K	Horiz. Feedback
R86	150KΩ	1/2	9BI-88	BTS-150K	Horiz. Phase Disc Diode Load
R87	150KΩ	1/2	9BI-88	BTS-150K	Horiz. Phase Disc Diode Load
R88	2.2Meg	1/2	9BI-90	BTS-2.2Meg	Horiz. Phase Disc Diode Load
R89	2.2Meg	1/2	9BI-90	BTS-2.2Meg	Horiz. Phase Disc Diode Load
R90	68KΩ	1/2	9BI-84	BTS-68K	Horiz. AFC Filter
R91	1500Ω	1/2	9BI-64	BTS-1500	Horiz. MV Cathode
R92	5600Ω	1/2	9B2-71	BTA-5600	Horiz. MV Plate
R93	120KΩ	1/2	9BI-87	BTS-120K	Horiz. MV Grid
R94	270KΩ	1/2	9BI-91	BTS-270K	Horiz. MV Plate
R95	220Ω	1/2	9BI-54		Parasitic Suppressor
R96	1Meg	1/2	9BI-98	BTS-1Meg	Horiz. Output Grid
R97	4700Ω	1	9B2-70	BTA-4700	Horiz. Output Screen
R98	3600Ω	5	9C12-2061	1 3/4A-3500	Decoupling-Wire Wound
R99	10Ω	1/2			Damping-See Note 1
R100	2.2Ω	1/2	9CI-1067		HV Rectifier Filament-See Note 9
R101	12KΩ	10	9C-20019	1 3/4A-12K	Decoupling
R102	470KΩ	1/2	9BI-94	BTS-470K	Isolation
R103	47KΩ	1/2	9BI-82	BTS-47K	AM Osc. Grid
R104	180Ω	1/2	9BI-53	BTS-180	AM IF Amp. Cathode
R105	2.2Meg	1/2	9BI-33	BTS-2.2Meg	AVC Network
R106	47KΩ	1/2	201-15005 ♦	BTS-47K	Diode Filter
R107	100Ω	1/2	9BI-62	BTS-1000	Decoupling-See Note 1

♦ Items R106, C101A, and C101B are combined into one unit.
Note 1 Not used in all models.
Note 2 Some models use 2.2 Microhenries RF Choke in this application.
Note 3 Some models use series resistors in this application to obtain desired value.
Note 4 Some models use 1000Ω resistor in this application.
Note 5 Some models use 47KΩ resistor in this application.
Note 6 Some models use 2.2Meg resistor in this application.
Note 7 Some models use 68KΩ resistor in this application.
Note 8 Some models use 100KΩ resistor in this application.
Note 9 Some models use choke in place of resistor.
Note 10 Some models use single units in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.9A	640VCT .250ADC	5VAC @ 3A	6.3VAC @ 1.5A SEC. 4 6.3VAC @ 7.2A	12A-18839 or 12A-18839-1	P-8159	P-3059	TP-395 and F-633 ①

① Mount separately where space permits.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	110Ω	B12M-18241	A-8111 ②	A-3000 ②	TBO-1 ②	Vert Block Osc Trans
T3	210Ω Tap 30Ω	8.5Ω Tap .5Ω SEC. 2 21Ω Tap 10Ω SEC. 3 0Ω	201-19817 or 201-19817-1				Horiz Output Trans
T4	700Ω Tap 8.5Ω	65Ω	12C-19048	A-8112 ②	A-3037	TSO-5 ②	Vert. Output Trans.
T5A B	15.5Ω 65Ω		201-19490	DY-7	MDF-70		Horiz. Deflection Coils Vert. Deflection Coils.

② Drill one new mounting hole.

RAYTHEON MODEL RC-1720A (Ch. 17 AY27)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	4.8KΩ	3.5Ω	415Ω	.5Ω	12C1 8743-1	A-3823 ②	A-3019	RO-9 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	BELMONT PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.5Ω	18A18865	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	38Ω	1.3 Henry	16A-17959	C-2326 ②	C-2991 ②	TR-3300 ②	② Drill one new mounting hole
L2	.250A	38Ω	1.3 Henry					

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	BELMONT PART No.	IRC PART No.	
L3	Ant. Coil	0Ω	0Ω	201-17143		Hi-Band (Part of L4) Includes 2 Trimmers (5-20MMF) and R7(470KΩ)
L4	Ant. Coil	0Ω	0Ω	201-17143		Lo-Band (Part of L3)
L5	RF Choke	.8Ω		16A-17128		
L6	RF Coil Primary	.1Ω		13E-17140		Hi-Band
L7	RF Coil Secondary	.1Ω		13E-17140		Hi-Band
L8	Osc. Coil	.1Ω		13E-17140		Hi-Band
L9	RF Coil Primary	.1Ω		13E-12046		Lo-Band
L10	RF Coil Secondary	.1Ω		13E-12046		Lo-Band
L11	Osc. Coil	.1Ω		13D-12155		Lo-Band
L12	RF Choke	1Ω		16A-18025		
L13	1st Video IF	.3Ω		13M-19521		
L14	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R19)
L15	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R23)
L16	Fil. Choke	.1Ω		201-15609		
L17	2nd Video IF	.2Ω		201-15612		
L18	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R26)
L19	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R27)
L20	3rd Video IF	.2Ω		201-15612		
L21	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R30)
L22	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R31)
L23	4th Video IF	.2Ω		201-15612		
L24	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries (In lieu of R34)
L25	RF Choke	2.4Ω		201-15608		
L26	5th Video IF	.8Ω	.8Ω	13B-19958		
L27	Fil. Choke	.2Ω		16A-17937		
L28	Peaking	.8Ω				63 Microhenries
L29	4.5MC Trap	1.6Ω				
L30	Peaking	26Ω		16A-19365		410 Microhenries
L31	Peaking	7.5Ω		16A-19485		240 Microhenries
L32	Peaking	10Ω		16A-19486		380 Microhenries
L33	Sound IF	2.8Ω		13A-19514		
L34	Ratio Det. Trans.	4Ω	.9Ω	13M-19257		Tap .9Ω
L35	Horiz. Osc.	80Ω		13D-19540		
L36	Horiz. Size	.3Ω		13M-18233		
L37	Horiz. Lin.	5.5Ω	Tap 3.8Ω	13M-19499		
L38	Fil. Choke	1Ω		16A-19818		Some models use 2.2Ω resistor (R100)
L39	AM Loop Ant.	2.5Ω		13E-19823		
L40	AM Osc. Coil	.9Ω	6Ω	13D-19663		
L41	1st AM IF	16Ω	16Ω	13B-17731		
L42	2nd AM IF	16Ω	16Ω	13B-17731		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			BELMONT PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250A	46B-18362	55F-18024	312.250	357001	

PHONO CARTRIDGE

ITEM No.	BELMONT PART No.	REPLACEMENT DATA						REMARKS
		ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL NEEDLE REPLACEMENTS SEE BELOW.

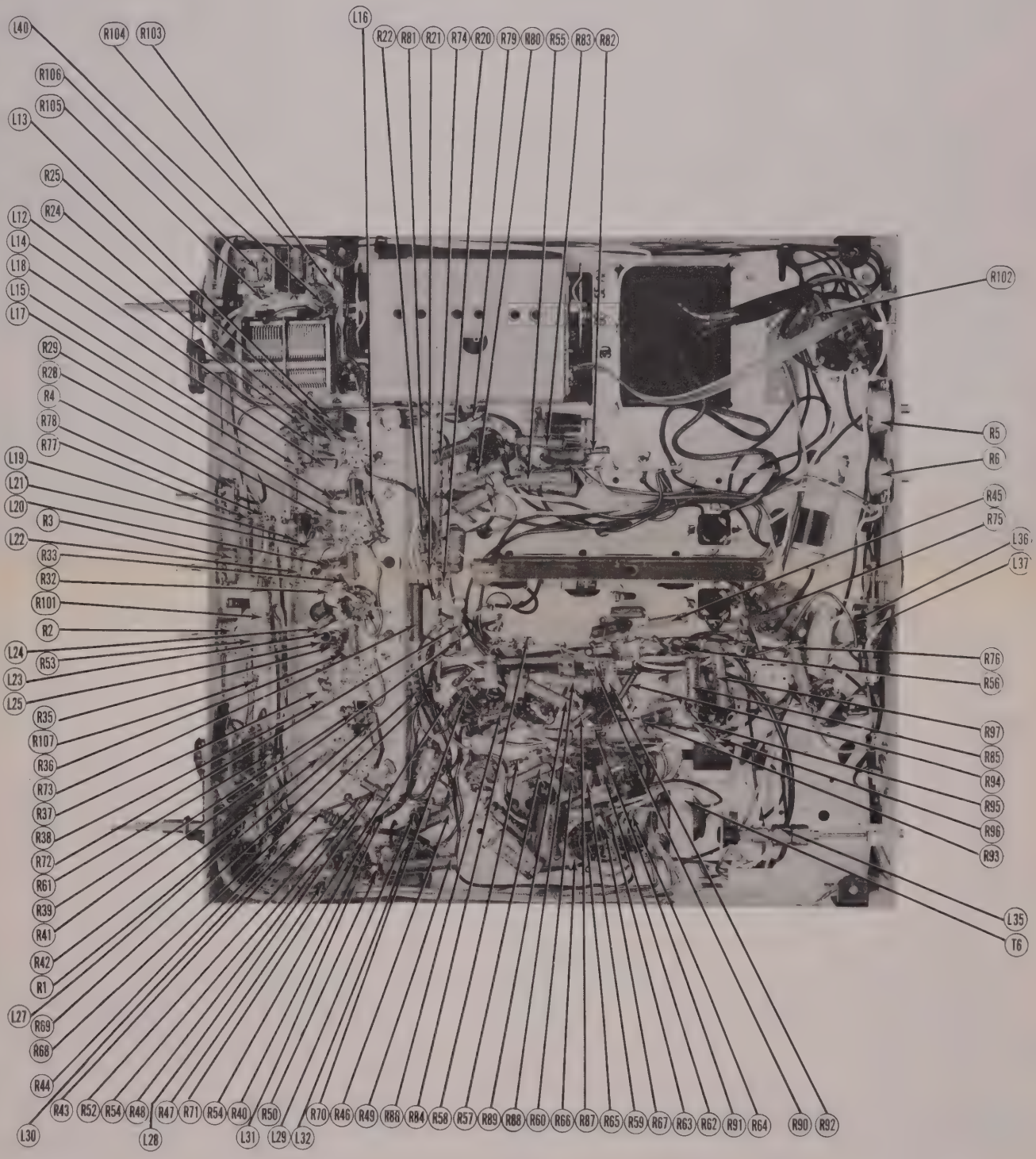
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	BELMONT PART No.	WALCO PART No.	
M3		W-30AGA	

MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
M4	RF Tuner		
M5	Crystal	CK-706	AM Tuner Detector
M6	Switch	20A-19642	Band (TV-AM-Phono)
M7	Focus Magnet	55P-19600-1	
M8	Ion Trap	16M-19906	
M9	Tuning Cap	8A-19655	(17-477 MMF, 28-162MMF)
B2	Trimmer	8E-18508	Horiz. Drive
A23	Trimmer	8E-19838	AM Ant.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

*TRADE MARK

REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

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MODEL 20D36

REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

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DATE 10-51 SET 147 FOLDER 10

PHOTOFACT* Folder

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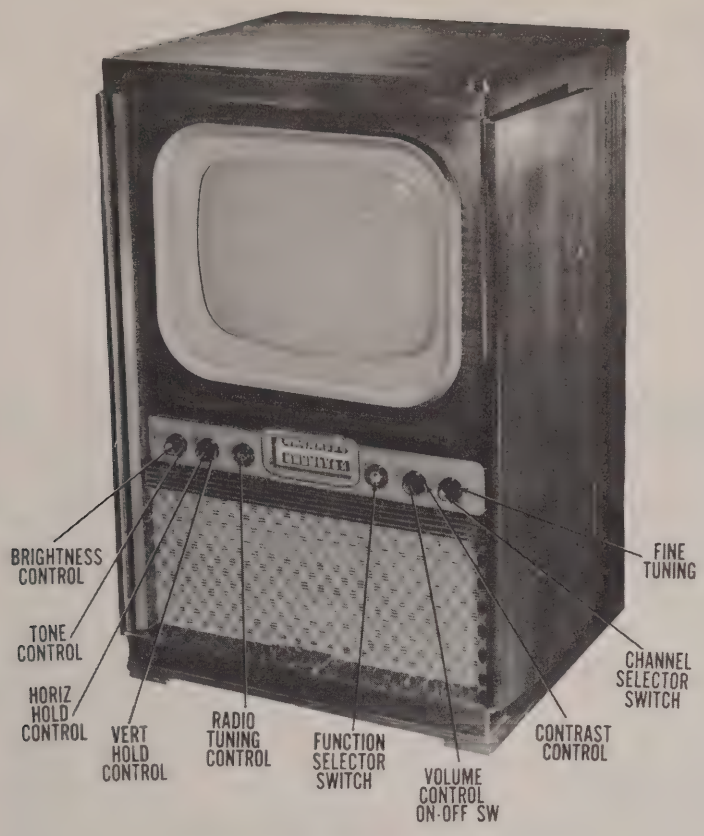
REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36



REGAL MODEL 20D36

TRADE NAME	Regal Models 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36
MANUFACTURER	Regal Electronics Corp., 605 W. 130th. St., New York, N. Y.
TYPE SET	TV-AM-FM Receiver (Some models TV "only")
TUBES	Thirty one (TV "only" Models) Thirty six (TV-AM-FM Models)
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATINGS	(TV) 3.3 Amp. at 117 Volts AC (RADIO) 2.2 Amp. at 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13 (FM) 88-108MC (AM) 540-1650KC

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REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

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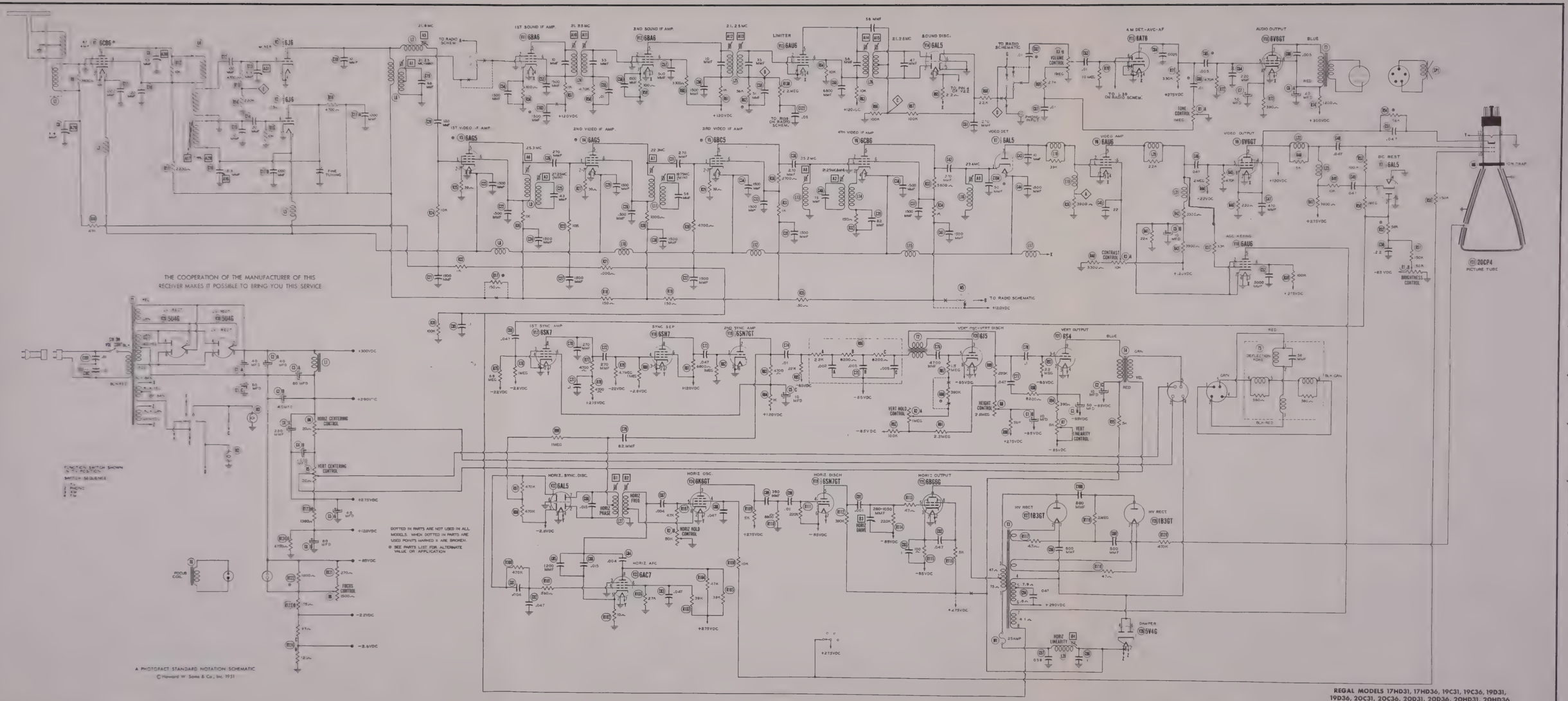
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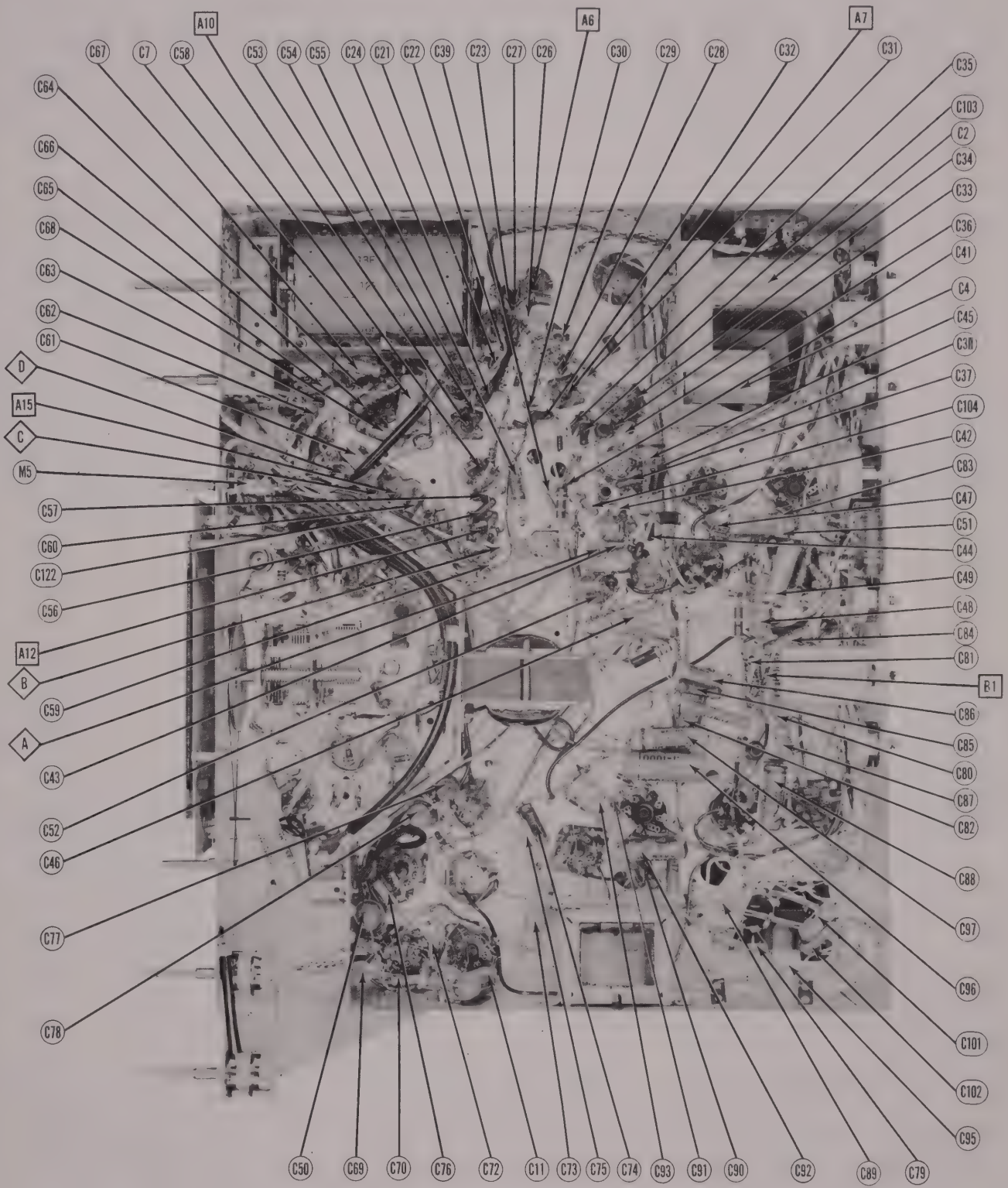
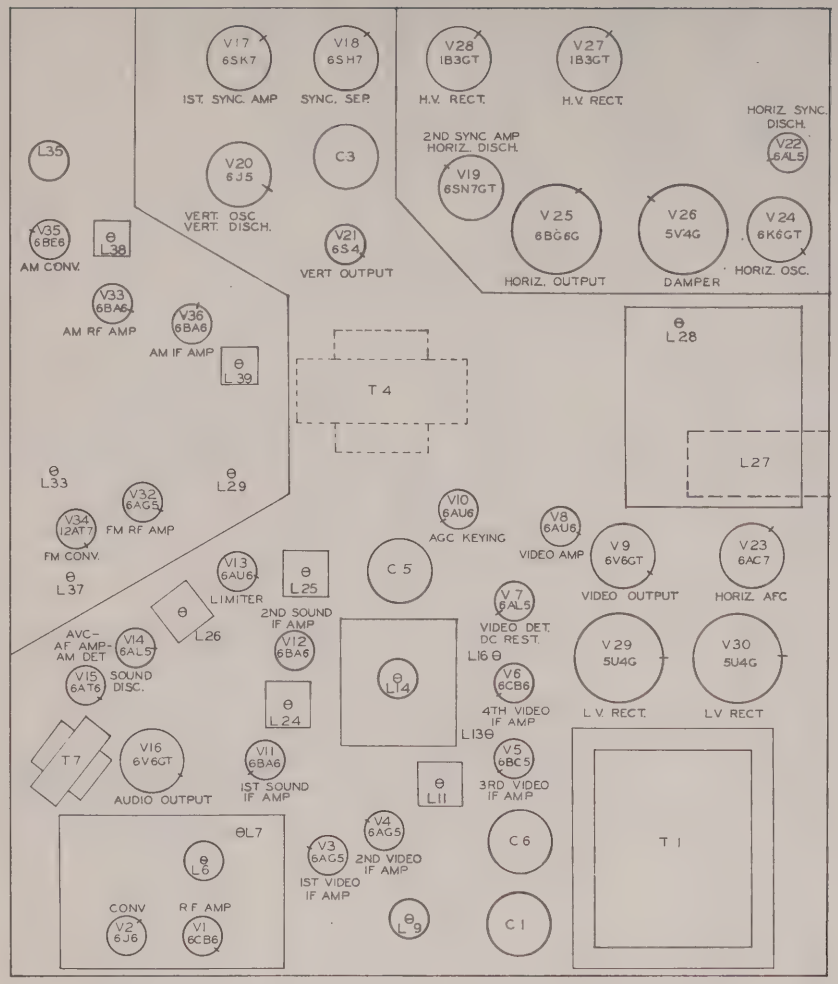
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

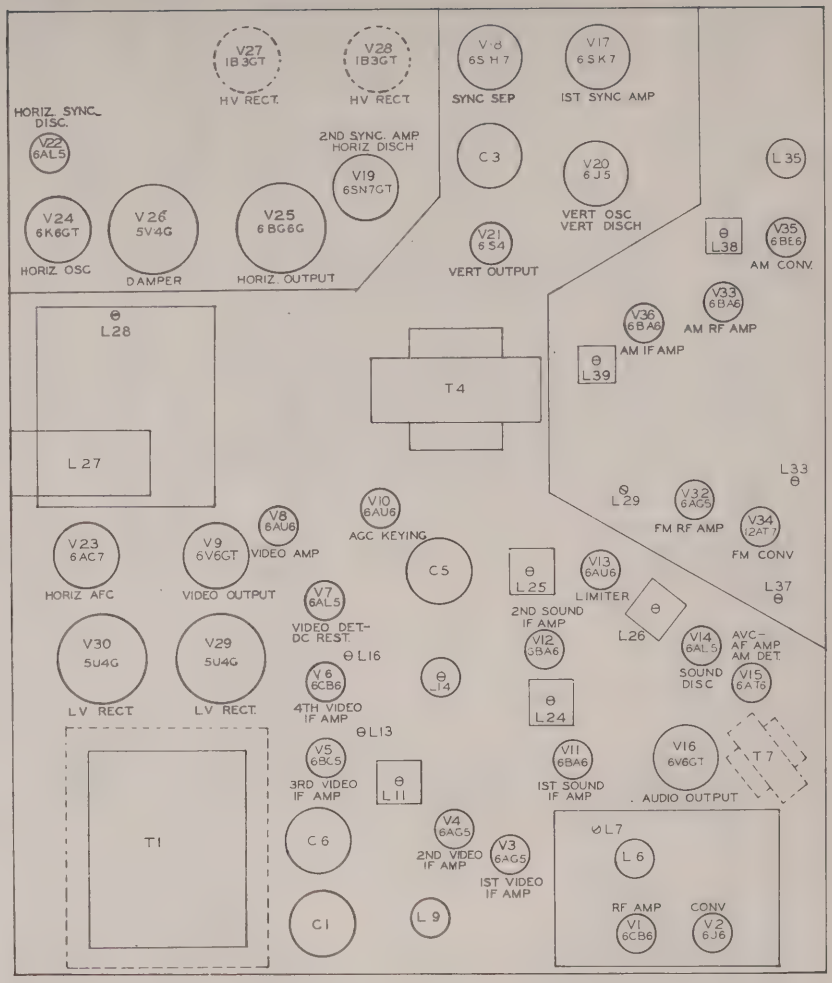
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the function selector switch to "TV", (maximum counter-clockwise).
The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V24), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C95, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	21.25MC (unmod.)	Any	DC Probe to Point (A). Common to Chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	27.25MC	"	"	A3	"
3.	"	"	19.75MC	"	"	A4	"
4.	"	"	21.8MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	25.3MC	"	"	A6	"
6.	"	"	22.3MC	"	"	A7	"
7.	"	"	25.2MC	"	"	A8	"
8.	"	"	23.4MC	"	"	A9	Adjust for maximum deflection. Recheck traps A1, A2, and A3.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 25.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A5 thru A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD.	High side to pin 1 (Grid) of 6BA6, (V11). Low side to chassis.	21.25MC (unmod.)	Any	DC Probe thru 1meg to Point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
11.	"	"	"	"	DC Probe thru 1meg to Point (C). Common to chassis.	A14	"
12.	"	"	"	"	DC Probe to Point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.01MFD.	High side to pin 1, (Grid) of 6BA6, (V11). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. Amp. thru 22KΩ to Point (B). Low side to chassis.	A10, A11 A12, A13	Adjust for maximum amplitude and symmetry as per fig. 2.
11.	"	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A15, A14	Adjust A15 so 21.25MC occurs at center of crossover lines as per fig. 3. Adjust A14 for maximum amplitude and straightness of crossover lines. Continue with step 13.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A16. It should be noted that this is an all channel oscillator circuit adjustment, and should not be adjusted for any individual channel. If adjustment of A16 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustments for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	215.75MC (unmod.)	13	DC Probe to Point (D). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point (E). Low side to chassis.	A29, A30 A31	Adjust for response curve similar to fig. 4 with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 4. If markers fall below 70% on any channel, make slight adjustment of A29, A30, and A31 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

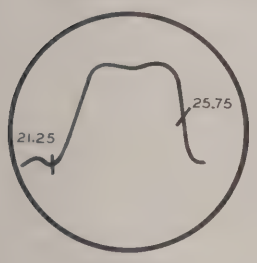


FIG. 1

FIG. 2

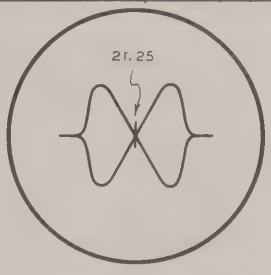


FIG. 3

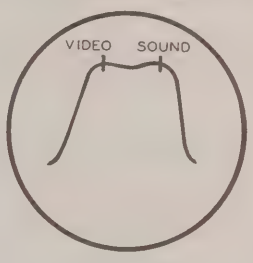


FIG. 4

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer under the vertical portion of the "4" on the "54" at the low frequency end of the AM dial scale.

AM ALIGNMENT

Turn the function selector switch to "AM", (third position clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
16.	.01MFD.	High side to pin 1, (Grid), of 6BA6, (V33). Low side to chassis.	456KC (400~ Mod.)	AM	Tuning gang fully open.	Across voice coil.	A32, A33 A34, A35	Adjust for maximum output.
17.	"	"	"	"	"	"	A36	Adjust for MINIMUM output.
18.		Loop	1650KC	"	"	"	A37	Adjust for maximum output.
19.		Loop	1500KC	"	Tune for max. output.	"	A38	"

FM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	.01MFD.	High side to pin 2, (Grid), of 12AT7, (V34). Low side to chassis.	21.25MC (unmod.)	FM	Tuning gang fully open.	DC Probe to Point (B). Common to Chassis.	A39	Adjust for maximum deflection.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
21.	Two 150Ω carbon resistors	Across "FM" ant. terminals with 150Ω in each lead.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC Probe to Point (B). Common to chassis.	A40	Adjust for maximum deflection.
22.	"	"	105MC	"	Tune for max. deflection.	"	A41	Rock tuning gang while adjusting A41 for maximum deflection.
23.	"	"	87.5MC	"	Tuning gang fully closed.	"	A42	Adjust for maximum deflection. Repeat steps 21 and 23 until tuning range is correct.
24.	"	"	90MC		Tune for max. deflection.	"	L31	Expand or compress coil turns for maximum deflection. Repeat steps 22 and 24 until no further improvement can be made.
24.	"	"	98MC	"	"	"	A43	Adjust for maximum deflection. Check L31 with a tuning wand. If necessary adjust L31 for maximum deflection.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-1.3VDC	0V	6.3VAC	0V	90VDC	90VDC	0V		
V 2	6J6	80VDC	110VDC	6.3VAC	0V	-.7VDC	§-1.5VDC	0V		
V 3	6AG5	-.3VDC	.1VDC	0V	6.3VAC	105VDC	105VDC	.1VDC		
V 4	6AG5	-.3VDC	.1VDC	6.3VAC	0V	105VDC	105VDC	.1VDC		
V 5	6BC5	-.4VDC	.1VDC	6.3VAC	0V	100VDC	115VDC	.1VDC		
V 6	6CB6	0V	1.4VDC	6.3VAC	0V	65VDC	110VDC	0V		
V 7	6AL5	0V	0V	6.3VAC	0V	.5VDC	0V	-.3VDC		
V 8	6AU6	-.3VDC	0V	0V	6.3VAC	95VDC	31VDC	0V		
V 9	6V6GT	0V	0V	235VDC	120VDC	-2.5VDC	280VDC	6.3VAC	2.3VDC	
V 10	6AU6	95VDC	100VDC	6.3VAC	0V	-1.8VDC	245VDC	100VDC		
V 11	6BA6	0V	0V	0V	6.3VAC	105VDC	105VDC	1.2VDC		
V 12	6BA6	0V	0V	6.3VAC	0V	110VDC	110VDC	1.2VDC		
V 13	6AU6	-.5VDC	0V	0V	6.3VAC	55VDC	55VDC	0V		
V 14	6AL5	-.2VDC	-.1VDC	5.1VAC	0V	0V	0V	-.1VDC		
V 15	6AT6	-.4VDC	0V	0V	6.3VAC	0V	-.3VDC	65VDC		
V 16	6V6GT	0V	6.3VAC	250VDC	255VDC	0V	0V	0V	16VDC	
V 17	6SK7	0V	0V	0V	-.4VDC	0V	110VDC	6.3VAC	190VDC	
V 18	6SH7	0V	0V	0V	-1.2VDC	0V	120VDC	6.3VAC	120VDC	
V 19	6SN7GT	-.8VDC	75VDC	0V	▲-36VDC	▲48VDC	▲0V	6.3VAC	0V	
V 20	6J5	0V	0V	▲65VDC ▲270VDC	▲0V	§▲-18VDC	▲-1VDC	6.3VAC	▲0V	
V 21	6S4	0V	▲8VDC ▲43VDC	▲0V	6.3VAC	0V	▲0V	0V	0V	▲350VDC ▲440VDC
V 22	6AL5	-.9VDC	-4.4VDC	0V	5.1VAC	-2.5VDC	0V	-4.4VDC		
V 23	6AC7	0V	0V	0V	-1.1VDC	0V	95VDC	6.3VAC	220VDC	
V 24	6K6GT	0V	0V	185VDC	205VDC	§-27VDC	275VDC	6.3VAC	.2VDC	
V 25	6BG6G	0V	6.3VAC	▲14VDC	0V	▲-2.5VDC	▲-2.5VDC	0V	▲360VDC	Top Cap *
V 26	5V4G	0V	400VDC	265VDC	280VDC	280VDC	275VDC	300VDC	400VDC	
V 27	1B3GT	* DO NOT MEASURE								Top Cap *
V 28	1B3GT	* DO NOT MEASURE								Top Cap *
V 29	5U4G	0V	300VDC	0V	280VAC	0V	280VAC	0V	300VDC	
V 30	5U4G	0V	300VDC	0V	280VAC	0V	280VAC	0V	300VDC	
V31	20CP4	0V	.8VDC	Pin 10 270VDC	Pin 11 2.4VDC	Pin 12 6.3VAC	H. V. Connector * * 13KV			
V32	6AG5	†0V	†.9VDC	0V	†6.3VAC	†125VDC	†125VDC	†.9VDC		
V33	6BA6	■-.1VDC	0V	0V	■6.3VAC	■80VDC	■120VDC	■.9VDC		
V34	12AT7	†135VDC	†0V	†3VDC	†6.3VAC	†6.3VAC	†130VDC	†§-.5VDC	†'0V	0V
V35	6BE6	■§14VDC	■0V	0V	■6.3VAC	■120VDC	■120VDC	■-.1VDC		
V36	6BA6	■-.2VDC	0V	0V	■6.3VAC	■120VDC	■120VDC	■1.6VDC		

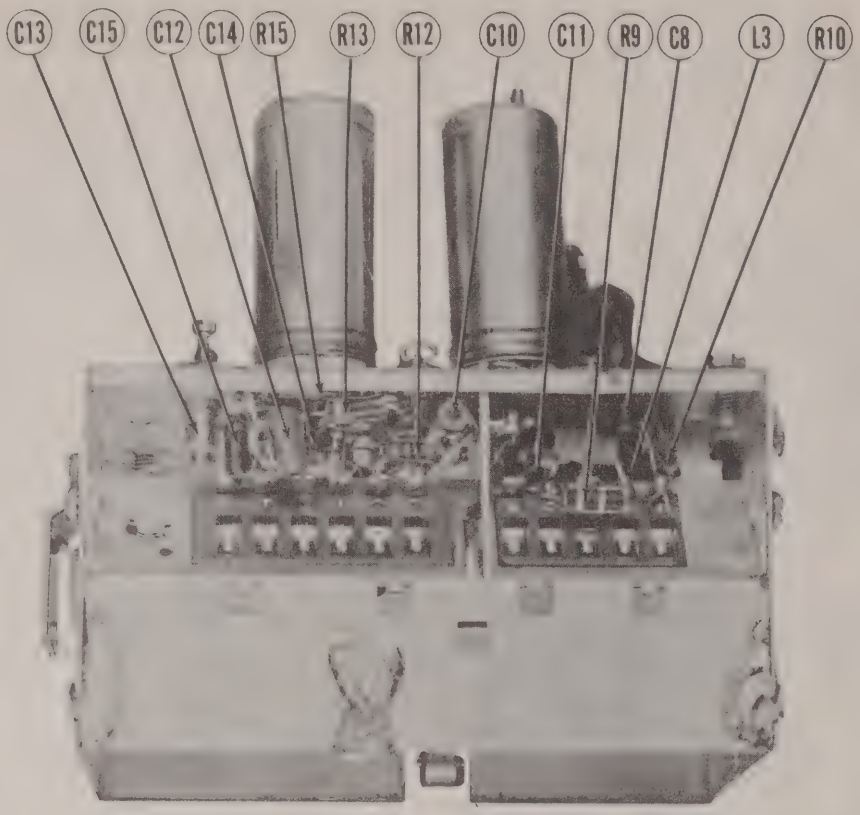
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED.
† MEASURED IN FM POSITION.
■ MEASURED IN AM POSITION.
▲ MEASURED FROM -85VDC LINE.
VERTICAL AND HORIZONTAL CENTERING FULLY COUNTER CLOCKWISE.
* DO NOT MEASURE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* * USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE.

RESISTANCE READINGS

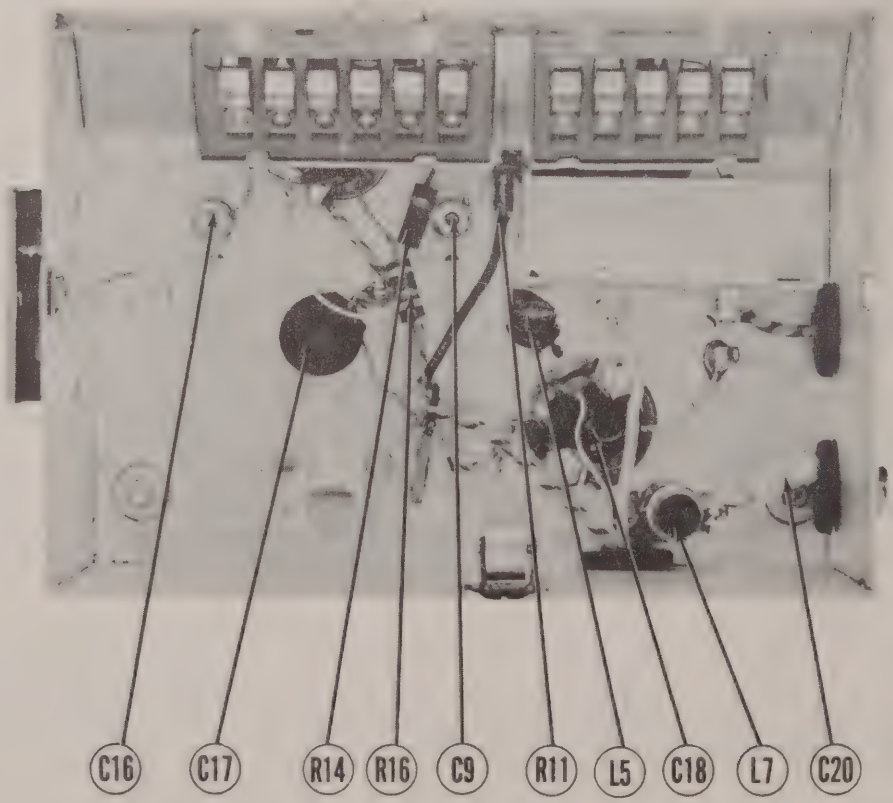
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	150KΩ	0Ω	.1Ω	0Ω	†4.2KΩ	†4.2KΩ	0Ω		
V 2	6J6	†6.7KΩ	†2KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AG5	110KΩ	39Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	39Ω		
V 4	6AG5	110KΩ	39Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	39Ω		
V 5	6BC5	105KΩ	39Ω	.1Ω	0Ω	†5.3KΩ	†2.6KΩ	39Ω		
V 6	6CB6	.1Ω	150Ω	.1Ω	0Ω	†8KΩ	†2.4KΩ	0Ω		
V 7	6AL5	.3Ω	200KΩ	.1Ω	0Ω	1.1Meg	0Ω	3.9KΩ		
V 8	6AU6	3.9KΩ	0Ω	0Ω	.1Ω	†8.6KΩ	†5KΩ	0Ω		
V 9	6V6GT	0Ω	0Ω	†3.9KΩ	†1.4KΩ	340KΩ	†70Ω	.1Ω	220Ω	
V 10	6AU6	†41KΩ	†5.3KΩ	.1Ω	0Ω	100KΩ	†100KΩ	†5.3KΩ		
V 11	6BA6	.1Ω	0Ω	0Ω	.1Ω	†2.4KΩ	†2.4KΩ	100Ω		
V 12	6BA6	470KΩ	0Ω	.1Ω	0Ω	†2.4KΩ	†4.7KΩ	100Ω		
V 13	6AU6	56KΩ	0Ω	0Ω	.1Ω	†7KΩ	†7KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	1Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	6AT6	10Meg	0Ω	0Ω	.1Ω	0Ω	515KΩ	†330KΩ		
V 16	6V6GT	15Ω	.1Ω	†1.4KΩ	†1.2KΩ	470KΩ	200KΩ	0Ω	390Ω	
V 17	6SK7	0Ω	0Ω	0Ω	1Meg	0Ω	†2.4KΩ	.1Ω	†9.5KΩ	
V 18	6SH7	0Ω	0Ω	0Ω	1Meg	0Ω	†1.4KΩ	.1Ω	†8.2KΩ	
V 19	6SN7GT	1Meg	†7.1KΩ	0Ω	▲220KΩ	#390KΩ	▲0Ω	.1Ω	0Ω	
V 20	6J5	0Ω	0Ω	†2.7Meg †276KΩ	†56KΩ	▲2.6Meg	▲1.1Meg	.1Ω	▲0Ω	
V 21	6S4	Inf.	▲5.3KΩ ▲390Ω	▲2.2Meg	.1Ω	0Ω	▲2.2Meg	Inf.	Inf.	#5.5KΩ
V 22	6AL5	940KΩ	1.5Meg	0Ω	1Ω	12Ω	0Ω	1.5Meg		
V 23	6AC7	0Ω	0Ω	0Ω	1.4Meg	10Ω	†18KΩ	.1Ω	†22KΩ	
V 24	6K6GT	Inf.	0Ω	†5KΩ	†10KΩ	100KΩ	†70Ω	.1Ω	10Ω	
V 25	6BG6G	Inf.	.1Ω	▲100Ω	Inf.	▲220KΩ	▲220KΩ	0Ω	#5KΩ	Top Cap #105Ω
V 26	5V4G	Inf.	#.1Ω	†150KΩ	†50Ω	†70Ω	†50Ω	†0Ω	5Meg	
V 27	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #150Ω
V 28	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap Inf.
V 29	5U4G	Inf.	4.3KΩ	Inf.	400Ω	Inf.	400Ω	Inf.	4.3KΩ	
V 30	5U4G	Inf.	4.3KΩ	56KΩ	400Ω	Inf.	400Ω	Inf.	4.3KΩ	
V31	20CP4	0Ω	1.3Meg	Pin 10 †15.KΩ	Pin 11 56KΩ	Pin 12 .1Ω				
V32	6AG5	0Ω	47Ω	0Ω	†.1Ω	††2KΩ	†† 2KΩ	47Ω		
V33	6BA6	1.5Meg	0Ω	0Ω	■.1Ω	■†4.7KΩ	■†1.4KΩ	47Ω		
V34	12AT7	††2KΩ	470KΩ	2.2KΩ	†.1Ω	†.1Ω	††2.4KΩ	15KΩ	.3Ω	0Ω
V35	6BE6	22KΩ	.8Ω	0Ω	■.1Ω	■†1.4KΩ	■†1.4KΩ	1.6Meg		
V36	6BA6	1.5Meg	0Ω	0Ω	■.1Ω	■†1.4KΩ	■†1.4KΩ	100Ω		

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

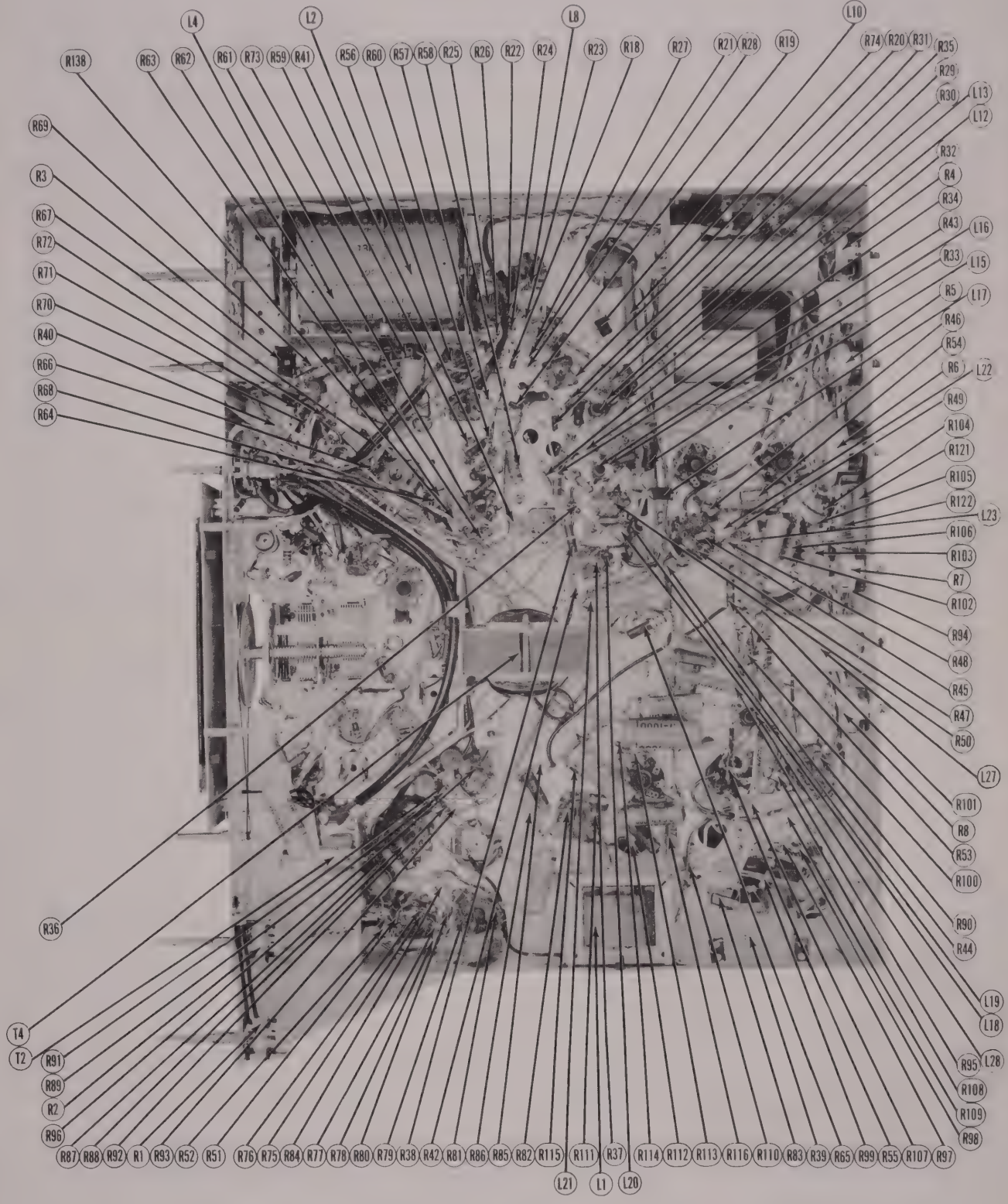
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
ALL MEASUREMFNTS TAKEN IN TV POSITION UNLESS NOTED.
FOCUS CONTROL FULLY COUNTER CLOCKWISE.
† MEASURED FROM PIN 8 OF V29
# MEASURED FROM PIN 8 OF V26.
▲ MEASURED FROM -85VDC LINE.
‡ MEASURED IN FM RADIO POSITION.
■ MEASURED IN AM RADIO POSITION.
VERTICAL AND HORIZONTAL CENTERING FULLY COUNTER CLOCKWISE.



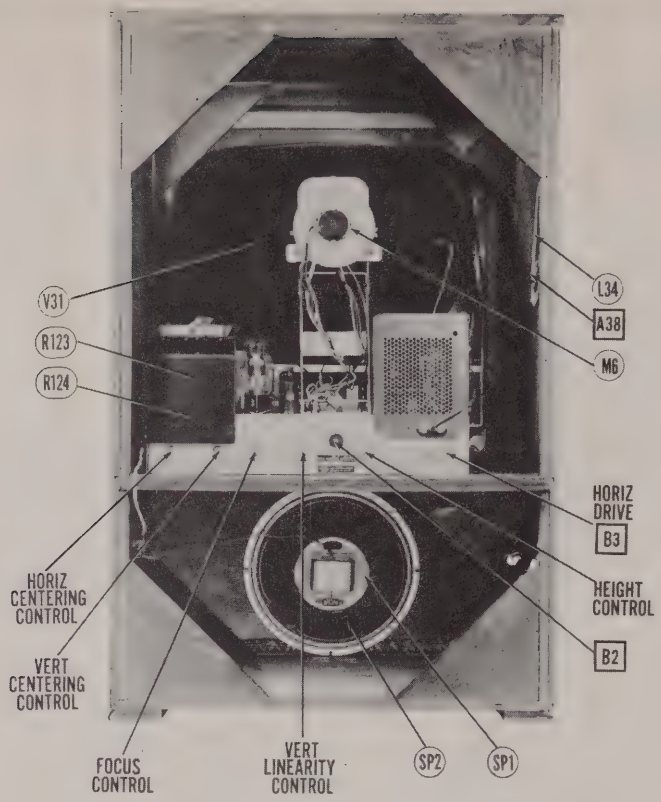
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

While receiving a television signal turn the horizontal hold control fully counter-clockwise. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return it to its normal operating position. The picture should pull back into synchronization.

Now turn the horizontal hold control fully clockwise. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return to its normal operating position. The picture should pull back into synchronization.

If receiver synchronizes properly under these checks it is not necessary to align the horizontal oscillator. However, if the picture is not normal or stable, the horizontal oscillator must be aligned.

SLIGHT RETOUCH ALIGNMENT

If the receiver failed in the above check at either extreme of the hold control, it may be possible to align the horizontal oscillator by making slight adjustments.

Tune in a TV station and adjust fine tuning for best sound quality. Adjust vertical hold control to vertically synchronize the picture. Adjust the contrast control to slightly less than normal. Turn the horizontal hold control to the extreme position in which the oscillator falls out of synchronization. Momentarily remove the signal. Adjust B_2 (rear of chassis) until the oscillator pulls into synchronization. Check hold and pull-in as outlined above.

COMPLETE ALIGNMENT

Tune in a TV station for the best sound quality. Adjust vertical hold control to vertically synchronize the picture. Adjust the contrast control to slightly less than normal.

Adjust B_1 until the blanking bar, which may appear in the picture, moves to the right and off the raster. If ripples occur in the raster turn B_1 in a clockwise direction until the unstable condition is removed. The length of this adjustment screw in its correct position is usually about $\frac{1}{2}$ inch beyond the bushing.

Turn horizontal hold control fully counter-clockwise and adjust B_2 counter-clockwise to the point where the picture synchronizes. Readjust B_1 so that the left side of the picture is close to the left side of the raster but does not fold over.

Turn the horizontal hold control fully clockwise. The right side of the picture should be close to the right side of the raster, but should not fold over. If it does, readjust B_1.

Momentarily remove the signal. When signal is restored, the picture should fall into synchronization. If it does not, turn B_2 counter-clockwise until picture falls into synchronization.

Turn horizontal hold control fully counter-clockwise. Picture should fall back into synchronization after momenatary removal of the signal.

If picture fails to synchronize after momentary removal of the signal at both extremes of the horizontal hold control, there may be insufficient pull-in range. However, if picture will pull in through 3/4 of the hold control range, operation should be satisfactory as excessive pull-in is objectionable. Excessive pull-in makes the control circuits more sensitive which may result in their being triggered by noise pulses. Also the vertical synchronizing and equalizing pulses may cause a bend in the upper part of the picture.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive trimmer, (B3), clockwise as far as possible without crowding or bright vertical lines appearing in the picture. Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Readjustment of B3 may be necessary for optimum results.

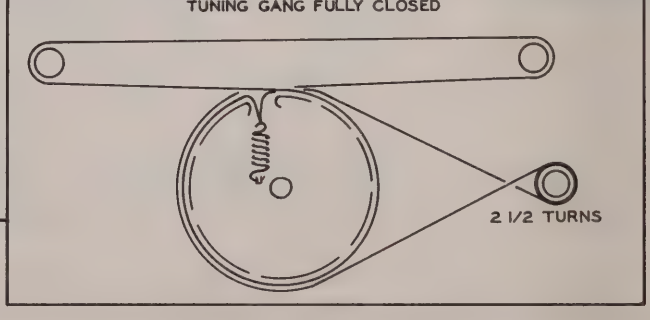
DISASSEMBLY INSTRUCTIONS

1. Remove ten push-on type control knobs.
2. Remove seven wood screws from rear cover. Remove rear cover.
3. Disconnect AM loop.
4. Disconnect speaker.
5. Remove four metal screws from chassis. Remove chassis.
6. Remove four 5/16" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE FOLLOWING:

1. Remove ten push-on type control knobs.
2. Remove front pannel. Remove picture tube.

DIAL CORD STRINGING



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3A	1st Video IF Amp.	6AG5	6AG5	7BD	
B	1st Video IF Amp.	6BC5	6BC5	7BD	
V4A	2nd Video IF Amp.	6AG5	6AG5	7BD	
B	2nd Video IF Amp.	6BC5	6BC5	7BD	
V5A	3rd Video IF Amp.	6BC5	6BC5	7BD	
B	3rd Video IF Amp.	6AG5	6AG5	7BD	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector DC Restorer	6AL5	6AL5	6BT	
V8	Video Amplifier	6AU6	6AU6	7BK	
V9	Video Output	6V6GT	6V6GT	7AC	
V10	AGC Keying	6AU6	6AU6	7BK	
V11	1st Sound IF Amp.	6BA6	6BA6	7BK	
V12	2nd Sound IF Amp.	6BA6	6BA6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Sound Discr.	6AL5	6AL5	6BT	
V15	AM Detector-AVC-AF Amplifier	6AT6	6AT6	7BT	
V16	Audio Output	6V6GT	6V6GT	7AC	
V17	1st Sync. Amp.	6SK7	6SK7	8N	
V18	Sync. Separater	6SH7	6SH7	8BK	
V19	2nd Sync. Amp. Horiz. Discharge	6SN7GT	6SN7GT	8BD	
V20	Vert. Oscillator-Vertical Disch.	6J5	6J5	6Q	
V21	Vertical Output	6S4	6S4	9AC	
V22	Horiz. Sync. Discr.	6AL5	6AL5	6BT	
V23	Horizontal AFC	6AC7	6AC7	8N	
V24	Horizontal Osc.	6K6GT	6K6GT	7S	
V25	Horiz. Output	6BG6G	6BG6G	5BT	
V26	Damper	5V4G	5V4G	5L	
V27	HV Rectifier	1B3GT	1B3GT	3C	
V28	HV Rectifier	1B3GT	1B3GT	3C	
V29	LV Rectifier	5U4G	5U4G	5T	
V30	LV Rectifier	5U4G	5U4G	5T	
V32	FM RF Amplifier	6AG5	6AG5	7BD	
V33	AM RF Amplifier	6BA6	6BA6	7BK	
V34	FM Converter	12AT7	12AT7	9A	
V35	AM Converter	6BE6	6BE6	7CH	
V36	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V31A	20CP4A	20CP4A	20CP4	12D	① Use single magnet ion trap.
B	19AP4A	19AP4A		12D	
C	19DP4A		19BP4A ①	12D	
D	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	T-60-1	AFH3-148		UPT4145-820		TVL-3761	▬ Filter ■ Vert. Osc. Dec.
B	10	450							▲ Bias Filter
C	80	150							
C2A	40	450	T-60-2	AFH3-43		UPT44145		TVL-3785	▬ Filter ■ Filter
B	40	450							▲ Vert. Output Dec.
C	10	450							
C3A	80	450	T-60-3	AFH2-91		UPT8045 V5		TVL-2710	▬ Filter ▲ Vert. Output Cathode
B	50	50							
C4A	250	10	T-60-6	AFH2-74		UPT200		TVL-2140	▬ Horiz. Cent. Bypass ▲ Vert. Cent. Bypass
B	1000	6							
C5A	40	450	T-60-4	AFH3-154		UPT41145		TVL-3772	▬ Filter ■ Video Amp. Dec.
B	10	450							▲ Sync. Dec.
C	10	350							
C6A	20	450	T-60-5	AFH2-95		UPT245-835		TVL-2730	▬ Audio Output Dec. ▲ Decoupling
B	80	350							
C7	50	50	60-104	PRS50/50		BR505		TVA-1308	Audio Output Cathode
C8	3-9				829-10				Variable Trimmer
C9	.5-3				829-3				Variable Trimmer
C10	120				TCN-120		N750L-121		RF Amp. Decoupling
C11	1000			SII000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C12	100			SII00N750	TCN-100		N750L-101	5TCU-T1	RF Coupling
C13	.5-3				829-3				Variable Trimmer
C14	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C15	10			SII0N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C16	.5-3				829-3				Variable Trimmer
C17A	1000			BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Bypass
B	1000								Conv. Fil.
C18	10			SII0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C19	68	500		1469-00007	TCZ-68		NP0-333-680	MS-47	Fixed Trimmer
C20	120				TCN-120		N750L-121		IF Coupling
C21	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C22	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Video IF Dec.
C23	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Video IF Fil.
C24	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C25	43	500			TCZ-43		NP0L-430		Fixed Trimmer
C26	270	500		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	IF Coupling
C27	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C28	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Video IF Dec.
C29	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Video IF Fil.
C30	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C31	270	500		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	IF Coupling
C32	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C33	1500			SII500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd. Video IF Dec.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REGAL PART No	REPLACEMENT DATA AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No.	ERIE PART No	SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C34	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd Video IF Fil.
C35	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C36	270	500		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	IF Coupling
C37	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	4th. Video IF Dec.
C38	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	4th. Video IF Fil.
C39	82				TV2-82		NP0-333-820		4th. Video IF Cathode
C40	75	500		1469-0000?5			NP0-33J-750		Fixed Trimmer
C41	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C42	270	500		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	IF Coupling
C43	50	500		1469-0000!	TC2-10	30Q5J	NP0K-100	MS-41	Video Det. Filter
C44	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	Video Det. Fil.
C45	22	400		P488-23		GT4P25		4TM-P22	Video Amp. Screen
C46	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C47	470	500		1469-0005	D6-471	5R5T3	GP2K-471	MS-35	Video Amp. Cathode
C48	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C49	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C50	22	400		P488-22		GT4P25		4TM-P22	Decoupling
C51	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C52	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Keying Screen
C53	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Sound IF Dec.
C54	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Sound IF Cathode
C55	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	2nd. Sound IF Grid
C56	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Sound IF Plate
C57	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Sound IF Screen
C58	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Sound IF Cathode
C59	51			S150	D6-500	5W5Q5	GP1K-500	5GA-Q5	Limiter Grid Filter
C60	6800			S16800	D6-682	1D3D7	GP2-333-682	5HK-D68	Limiter Decoupling
C61	220	500		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	De-emphasis
C62	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling ††
C63	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C64	220	500		1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Audio Output Grid
C65	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling ¶
C66	01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp. *
C67	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C68	005	600		P688-005	DF-503	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C69	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C70	270	1000		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	1st. Synd. Amp. Plate
C71	1	600		P688-1	DF-104	PTE6P1		6TM-P1	1st. Sync. Amp. Dec.
C72	270	1000		1469-0003	D6-271	5R5T3	GP2K-271	MS-33	Sync. Coupling
C73	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C74	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Sync. Coupling
C75A	002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net
B	005			P688-005	‡PC-100	PTE6D5	GP2-333-502	‡101C1	Vert. Integrator Net
C	005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C76	4700	500		1464-005		1DR5D4		MS-25	Vert. Sync. Coupling
C77	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Vert. Discharge
C78	1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C79	82	500							Horiz. Sync. Coupling
C80	015	1000		P688-015		PTE6S15		6TM-S15	Fixed Trimmer
C81	004	1000		P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	AFC Filter
C82	047	600		P688-047	DF-503	PTE6S5		6TM-S47	AFC Filter
C83	047	600		P688-047	DF-503	PTE6S5		6TM-S47	AFC Screen
C84	004	1000		P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	AFC Coupling
C85	1200			S11200	D6-122	1R5D15	GP2L-122		Phase Shifting Net.
C86	015	1000		P688-015		PTE6S15		6TM-S15	Phase Shifting Net.
C87	004	1000		P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Horiz. Osc. Grid Cap.
C88	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Osc. Screen
C89	390	500		1469-0004		5R5T4		MS-34	Differentiating Net.
C90	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. Sweep Coupling
C91	001	1000		P1068-001		PTE6D1		MB-D1	Horiz. Sweep Coupling
C92	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C93	1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Cathode
C94	047	600		P688-047	DF-503	PTE6S5		6TM-S47	Fixed Trimmer
C95	1	100		485-1.0		GT2W1		2TM-M1	AGC Filter
C96	1	1000		1684-1					Damper Filter
C97	.039	1000							Damper Filter
C98	500	20000		HV20C	TV3-502				HV Filter
C99	500	20000		HV20C	TV3-502				HV Filter
C100	500	20000		HV20A	TV1-502			510C1	HV Doubler
C101	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C102	01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C103	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass *
C104	50	500		1469-00005		5R5Q5		MS-45	Fixed Trimmer *
C105	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM RF Amp. Dec.
C106	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM RF Amp. Cathode †
C107	50			SI47N750	TCN-47		N750K-470	5TCU-Q47	FM RF Coupling
C108	50			SI47N750	TCN-47		N750K-470	5TCU-Q47	FM RF Coupling
C109	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv. Cathode
C110	50			SI47N750	TCN-47		N750K-470	5TCU-Q47	FM Osc. Grid Cap.
C111	50			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Padder
C112	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Osc. Anode
C113	2.2	500			TCZ-2.2		NP0K-2R2		FM Osc. Coupling
C114	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv. Decoupling
C115	250	500		1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	FM IF Coupling
C116	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AM RF Coupling
C117	100	500		1469-0001	TCZ-100	5R5T1	NP0-333-101	MS-31	AM Osc. Grid Cap.
C118	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C119	.05	200		P488-05	DF-503	PTE4S5		2TM-S5	AM IF Amp. Cathode
C120	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Filter †
C121	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Filter
C122	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C123	.25	400		P288-25		GT4P25		4TM-P25	Decoupling *
C124	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Ant. Isolation †
C125	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM RF Amp. Dec. *
C126	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass *
C127	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Conv. Fil. *

* Not used in all models.
† Some models use 1500MMF. in this application.
‡ Some models use 220MMF. in this application.
¶ Some models use .01MFD. in this application.
†† Some models use .0025MFD. in this application.
◆ Items C75A, C75B, C75C, R86A, R86B, R86C are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REGAL PART No	IRC PART No.	CLAROSTAT PART No	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	1	T-20-2	Concentrikit ♯			Tone Control-Front
B	50KΩ	1		B11-137 ♯	RTV-65		Brightness Control-Rear
C	Shaft End			E-187 ♯			Attach Per Instructions in Concentrikit
R2A	1Meg	1	T-20-2	Concentrikit ♯			Vert. Hold Control-Front
B	50KΩ	1		B11-137 ♯	RTV-65		Horiz. Hold Control-Rear
C	Shaft End			E-187 ♯			Attach Per Instructions in Concentrikit
R3A	10KΩ	1		Concentrikit ♯			Contrast Control-Front
B	1Meg	1	T-20-12	B11-116 ♯	RTV-1		Volume Control-Tapped @ 150KΩ-Rear
C	Shaft End			B13-137X ♯			Attach Per Instructions in Concentrikit
D	Switch			E-187 ♯			Attach Per Instructions in Concentrikit
R4	20Ω	2	T-20-7	76-1 ♯	43-20	VK-110	Horiz. Centering Control-Wire Wound
R5	20Ω	2	T-20-7	W-20X10	RTV-98	SVT-991	Vert. Centering Control Tapped @ 10Ω-Wire Wound
R6	1500Ω	4	T-20-8		RTV-6	SVP-994	Focus Control-Wire Wound
R7A	5000Ω	1	T-20-6	QU-114	AM-19-8	AN-10	Vert. Linearity Control-
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Attach to R7A Per Instructions
R8A	2.5Meg	1	T-20-5	QU-239	AM-84-8	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FK8	AK-1	Attach to R8A Per Instructions

♯ Additional parts to be used with concentrikit.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REGAL PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω	1		BTS-3900	Antenna Coil Shunt
R10	47KΩ 20%	1		BTS-47K	AGC Network
R11	2200Ω 20%	1		BTS-2200	RF Amp. Decoupling
R12	10KΩ	1		BTS-10K	RF Coil Shunt
R13	4700Ω	1		BTS-4700	Mixer Grid
R14	220KΩ 20%	1		BTS-220K	Mixer Grid
R15	10KΩ	1		BTS-10K	Osc. Grid
R16	4700Ω	1		BTS-4700	Osc. Plate
R17	150Ω	1		BTS-150	Decoupling-See Note 1
R18	150Ω 20%	1		BTS-150	Decoupling
R19	150Ω	1		BTS-150	Decoupling
R20	47000Ω	1		BTS-4700	AGC Network
R21	10000Ω	1		BTS-1000	AGC Network
R22	1000Ω	1		BTS-1000	AGC Network
R23	10KΩ	1		BTS-10K	AGC Network
R24	10KΩ 20%	1		BTS-10K	AGC Network
R25	39Ω	1			1st Video IF Amp. Cathode
R26	1000Ω	1		BTS-1000	1st Video IF Amp. Decoupling
R27	39Ω	1			2nd Video IF Amp. Cathode
R28	1000Ω	1		BTS-1000	2nd Video IF Amp. Decoupling
R29	39Ω	1			3rd Video IF Amp. Cathode
R30	2700Ω	1		BTS-2700	3rd Video IF Amp. Plate
R31	1000Ω 20%	1		BTS-1000	3rd Video IF Amp. Decoupling
R32	150Ω 20%	1		BTS-150	4th Video IF Amp. Cathode
R33	5600Ω	1		BTS-5600	4th Video IF Amp. Plate
R34	1000Ω 20%	1		BTS-1000	4th Video IF Amp. Decoupling
R35	150Ω 20%	1		BTS-150	Decoupling
R36	3900Ω	1		BTS-3900	Video Det. Diode Load
R37	33KΩ	1		BTS-33K	Keyed AGC Grid
R38	100KΩ 20%	1		BTA-100K	Keyed AGC Screen
R39	100KΩ	1		BTS-100K	AGC Network
R40	3300Ω	1		BTA-3300	Voltage Divider
R41	22KΩ	1		BTA-22K	Voltage Divider
R42	3300Ω	1		BTS-3300	Video Amp. Plate
R43	3900Ω	1		BTA-3900	Video Amp. Plate Decoupling
R44	1.2Meg	1		BTS-1.2Meg	Bias Network
R45	470KΩ 20%	1		BTS-470K	Video Output Grid
R46	220Ω	1		BTS-220	Video Output Cathode
R47	3900Ω	1		BTA-3900	Video Output Plate
R48	15KΩ	1		BTS-15K	Video Peaking Coil Shunt
R49	10KΩ	1		BTS-10K	Isolation
R50	1Meg	1		BTS-1Meg	DC Restorer Diode Load
R51	150KΩ	1		BTS-150K	Voltage Divider
R52	56KΩ	1		BTA-56K	Voltage Divider-See Note 2
R53	100KΩ 20%	1		BTA-100K	Picture Tube Grid
R54	56KΩ	1		BTA-56K	Picture Tube Cathode-See Note 2
R55	150KΩ	1		BTS-150K	ACC Anode Load
R56	100Ω	1		BTS-100	1st Sound IF Amp. Cathode
R57	1000Ω 20%	1		BTS-1000	1st Sound IF Amp. Decoupling
R58	470KΩ 20%	1		BTS-470K	2nd Sound IF Amp. Grid
R59	100Ω	1		BTS-100	2nd Sound IF Amp. Cathode
R60	3300Ω	1		BTS-3300	2nd Sound IF Amp. Screen
R61	1000Ω 20%	1		BTS-100C	2nd Sound IF Amp. Plate
R62	56KΩ	1		BTA-56K	Limiter Grid-See Notes 2 and 4
R63	10KΩ	1		BTA-10K	Limiter Decoupling
R64	10KΩ	1		BTA-10K	Voltage Divider
R65	2.2Ω	1		BW-1-2.2	Diode Filament-Wire Wound
R66	100KΩ	1		BTS-100K	Disc Diode Load
R67	100KΩ	1		BTS-100K	Disc Diode Load
R68	22KΩ	1		BTA-22K	De-Emphasis
R69	27KΩ	1		BTS-27K	Tone Compensation
R70	10Meg	1		BTS-10Meg	AF Amp. Grid
R71	330KΩ	1		BTS-330K	AF Amp. Plate
R72	470KΩ	1		BTS-470K	Output Grid
R73	39ΩΩ	1		BTA-390	Output Cathode
R74	1200Ω	5		1 3/4A-1200	Output Decoupling-Wire Wound
R75	6.8Meg	1		BTS-6.8Meg	Bias Network
R76	1Meg 20%	1		BTS-1Meg	1st Sync. Amp. G rid
R77	4700Ω	1		BTA-4700	1st Sync Amp. Plate
R78	4700Ω	1		BTA-4700	1st Sync. Amp. Plate Decoupling
R79	4.7Meg	1		BTS-4.7Meg	Bias Network
R80	1Meg	1		BTS-1Meg	Sync. Sep. Grid
R81	6800Ω	1		BTS-6800	Sync. Sep. Plate
R82	1Meg	1		BTS-1Meg	2nd Sync. Amp. Grid
R83	4700Ω	1		BTA-4700	2nd Sync. Amp. Plate
R84	1000Ω 20%	1		BTS-1000	Decoupling
R85	22KΩ 20%	1		BTS-22K	Voltage Divider
R86A	22KΩ	1		BTS-22K	Integrator
B	8200Ω	1		BTS-8200	Integrator
C	8200Ω	1		BTS-8200	Integrator

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REGAL PART No.	IRC PART No.	IDENTIFICATION CODES
R87	1.5Meg	1		BTS 1.5Meg	Vert. Osc. Grid
R88	390KΩ	1		BTS 390K	Vert. Osc. Grid See Note 1
R89	220KΩ	1		BTS 220K	Vert. Osc. Plate
R90	56KΩ	1		BTA-56K	Vert. Osc. Decoupling
R91	2.2Meg 20%	1		BTS-2.2Meg	Voltage Divider
R92	100KΩ 20%	1		BTS-100K	Voltage Divider
R93	2.2Meg	1		BTS-2.2Meg	Vert. Output Grid
R94	390Ω	1		BTS-390	Vert. Output Cathode
R95	5000Ω	5		1 3/4A-5000	Vert. Output Decoupling - Wire Wound
R96	8200Ω 20%	1		BTS-8200	Vert. Peaking
R97	470KΩ 20%	1		BTS 470K	Horiz. Sync. Disc Diode Load
R98	470KΩ 20%	1		BTS-470K	Horiz. Sync. Disc. Diode Load
R99	1Meg	1		BTS-1Meg	Horiz. Sync. Disc. Diode Load
R100	470KΩ	1		BTS-470K	Horiz. AFC Filter
R101	560Ω 5%	1		BTS 560	Horiz. AFC Grid
R102	10Ω	1			Horiz. AFC Cathode
R103	39KΩ	1		BTA-39K	Horiz. AFC Screen
R104	47KΩ	1		BTA-47K	Horiz. AFC Plate
R105	39KΩ	1		BTA-39K	Horiz. AFC Plate
R106	27KΩ 5%	1		BTA-27K-5%	Voltage Divider
R107	47KΩ	1		BTS-47K	Horiz. Osc. Grid
R108	10KΩ	1		BTA-10K	Horiz. Osc. Screen
R109	5000Ω	5		1 3/4A-5000	Horiz. Osc. Plate - Wire Wound
R110	6800Ω 20%	1		BTS-6800	Horiz. Peaking
R111	220KΩ 20%	1		BTS-220K	Horiz. Disch. Grid
R112	390KΩ	1		BTS-390K	Horiz. Disch. Plate
R113	47Ω 20%	1			Parasitic Suppressor
R114	220KΩ 20%	1		BTS-220K	Horiz. Output Grid
R115	100Ω	2		BW-2-100	Horiz. Output Cathode
R116	5000Ω	5		1 3/4A-5000	Horiz. Output Screen - Wire Wound
R117	4.7Ω	1		BW-1-4.7	HV Rectifier Filament - Wire Wound
R118	4.7Ω	1		BW-1-4.7	HV Rectifier Filament - Wire Wound
R119	2Meg	5			HV Rectifier Load
R120	470KΩ	1			HV Filter
R121	270Ω	2		BW-2-270	Focus Coil Shunt
R122	1800Ω	2		BTB-1800	Focus Coil Shunt - See Note 3
R123A	1360Ω	20			Voltage Divider - Wire Wound
B	175Ω	20			Voltage Divider - Wire Wound
124A	6750Ω				Voltage Divider - Wire Wound
B	12Ω	20			Voltage Divider - Wire Wound
C	93Ω				Voltage Divider - Wire Wound
R125	47Ω	1			FM RF Amp. Cathode
R126	680Ω	1		BTS-680	FM RF Amp. Decoupling
R127	47Ω	1			AM RF Amp. Cathode
R128	3300Ω	1		BTS-3300	AM RF Amp. Plate
R129	470KΩ	1		BTS-470K	FM Mixer Grid
R130	2200Ω	1		BTS-2200	FM Mixer Cathode
R131	680Ω	1		BTS-680	FM Mixer Plate Decoupling
R132	15KΩ	1		BTS-15K	FM Osc. Grid
R133	1000Ω	1		BTS-1000	FM Osc. Plate
R134	100KΩ	1		BTS-100K	AM Conv. Grid
R135	22KΩ	1		BTS-22K	AM Osc. Grid
R136	4700Ω	1		BTS-4700	1st. FM IF Amp. Grid
R137	2.2Meg	1		BTS-2.2Meg	AVC Network
R138	2.2Meg	1		BTS-2.2Meg	AVC Network
R139	1Meg	1		BTS-1Meg	AVC Network
R140	470KΩ	1		BTS-470K	AVC Network
R141	47KΩ	1		BTS-47K	Diode Filter
R142	100Ω	1		BTS-100	AM IF Amp. Cathode

◆ Items R86A, R86B, R86C, C75A, C75B, and C75C are combined into one unit.
Note 1 Not used in all models.
Note 2 Some models use 47KΩ Resistor in this application.
Note 3 Some models use 2000Ω Resistor in this application.
Note 4 "TV only"models use 22KΩ Resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 3.3A	720VCT .400VDC	5VAC ③ 2A	5VAC ② 6A SEC. 4 12.6VAC ② 5A	T140-1		P-3066	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1100Ω	T140-7	A-8111①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	122Ω	8.5Ω	T30-51		HVO-5 and MWC-1		Horiz. Output Trans.
	Tap 75Ω	Tap .6Ω					
		SEC. 2					
		4 1Ω					
		SEC. 3					
		0Ω					
		SEC. 4					
		0Ω					
T4	580Ω	7Ω	T140-9	A-8115	A-3035	TSO-1	Vert. Output Trans
T5A	16Ω		T30-52	DY-7	MDF-70		Horiz Deflection Coils
B	65Ω						Vert. Deflection Coils.
T6	350Ω				MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	2.6KΩ	3.5Ω	200Ω	.6Ω	T140-13	A-3823①	A-2930	RO-9①	① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	REAG REGAL PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.5Ω		12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 3/8	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.350A	4.3Ω	1.5 Henries	T140-14	C-2326		TR-3300	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	REGAL PART No.		
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid and Osc. Coil	0Ω				
L5	Fil. Choke	0Ω				
L6A	Plate Choke	1.8Ω				
B	Sound Take-off Coil	0Ω				
L7	1st. Video IF	1.2Ω				
L8	Fil. Choke	0Ω		T-30-11		
L9	2nd. Video IF	.3Ω		T-30-4		Includes Trap
L10	Fil. Choke	0Ω		T-30-11		
L11	3rd. Video IF	.2Ω		T-30-5		Includes Trap
L12	Fil. Choke	0Ω		T-30-11		
L13	4th. Video IF	.1Ω		T-30-6		
L14	Cathode Trap	.1Ω		T-30-3		
L15	Fil. Choke	0Ω.		T-30-11		
L16	5th. Video IF	.2Ω		T-30-6		
L17	Fil. Choke	0Ω		T-30-11		
L18	Peaking	6.5Ω		T-30-9		180 Microhenries wound on 39KΩ resistor.
L19	Peaking	7.5Ω		T-30-8		250 Microhenries
L20	Peaking	7Ω		T-30-7		120 Microhenries wound on 22KΩ resistor
L21	Peaking	4.5Ω		T-30-10		93 Microhenries
L22	Peaking	4.5Ω		T-30-10		93 Microhenries
L23	Peaking	1.6Ω		T-3-59		20 Microhenries
L24	1st. Sound IF	.2Ω	.1Ω	T-30-1		
L25	2nd. Sound IF	.2Ω	.1Ω	T-30-1		
L26	Disc. Trans.	.1Ω	.1Ω	T-30-2		Tap .1Ω
L27	Horiz. Disc. Trans.	46Ω	39Ω	T-30-18		Tap on Primary 0Ω. Tap on Secondary 10Ω
L28	Horiz. Lin.	30Ω		T-30-16		
L29	FM Ant. Trans	0Ω	0Ω	30-160		Tap 0Ω
L30	Plate Choke	.3Ω		140-114		
L31	FM-RF Coil	0Ω		30-193		
L32	Cathode Choke	.3Ω		140-114		
L33	FM Osc. Coil	0Ω		30-163		
L34	AM Loop Ant.	1.1Ω		30-128		
L35	AM RF Coil	48Ω		30-106		
L36	AM Osc. Coil	6Ω		30-153		
L37	1st. FM IF	.1Ω		55-103		
L38	1st. AM IF	16Ω	16Ω	30-154		
L39	2nd. AM IF	10Ω	10Ω	30-155		

FUSES

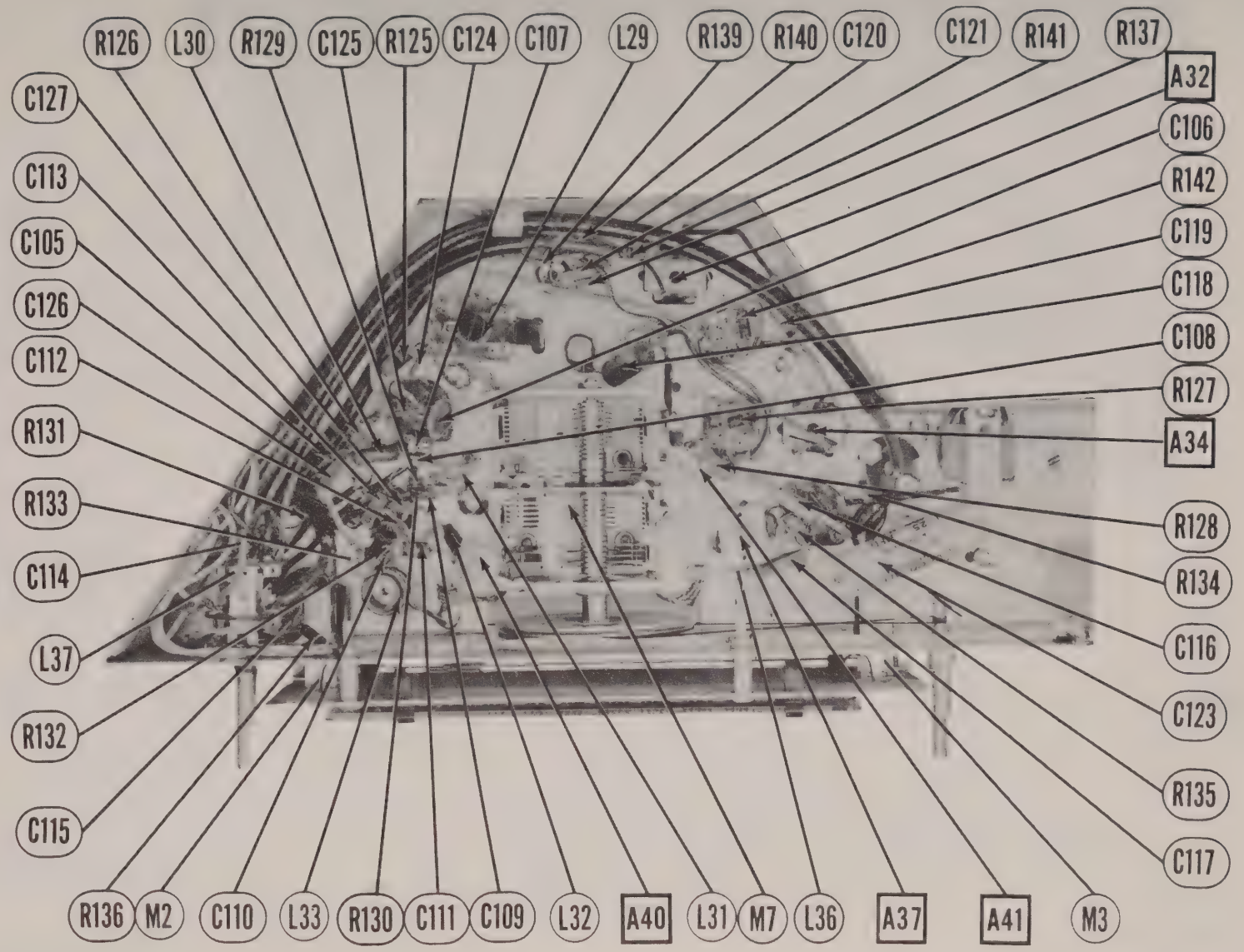
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			REGAL PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250	312.250		357001		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					REGAL PART No.		
M2	Bayonet	6-8	.15	Brown			Type number 47.
M3	Bayonet	6-8	.15	Brown			Type number 47.

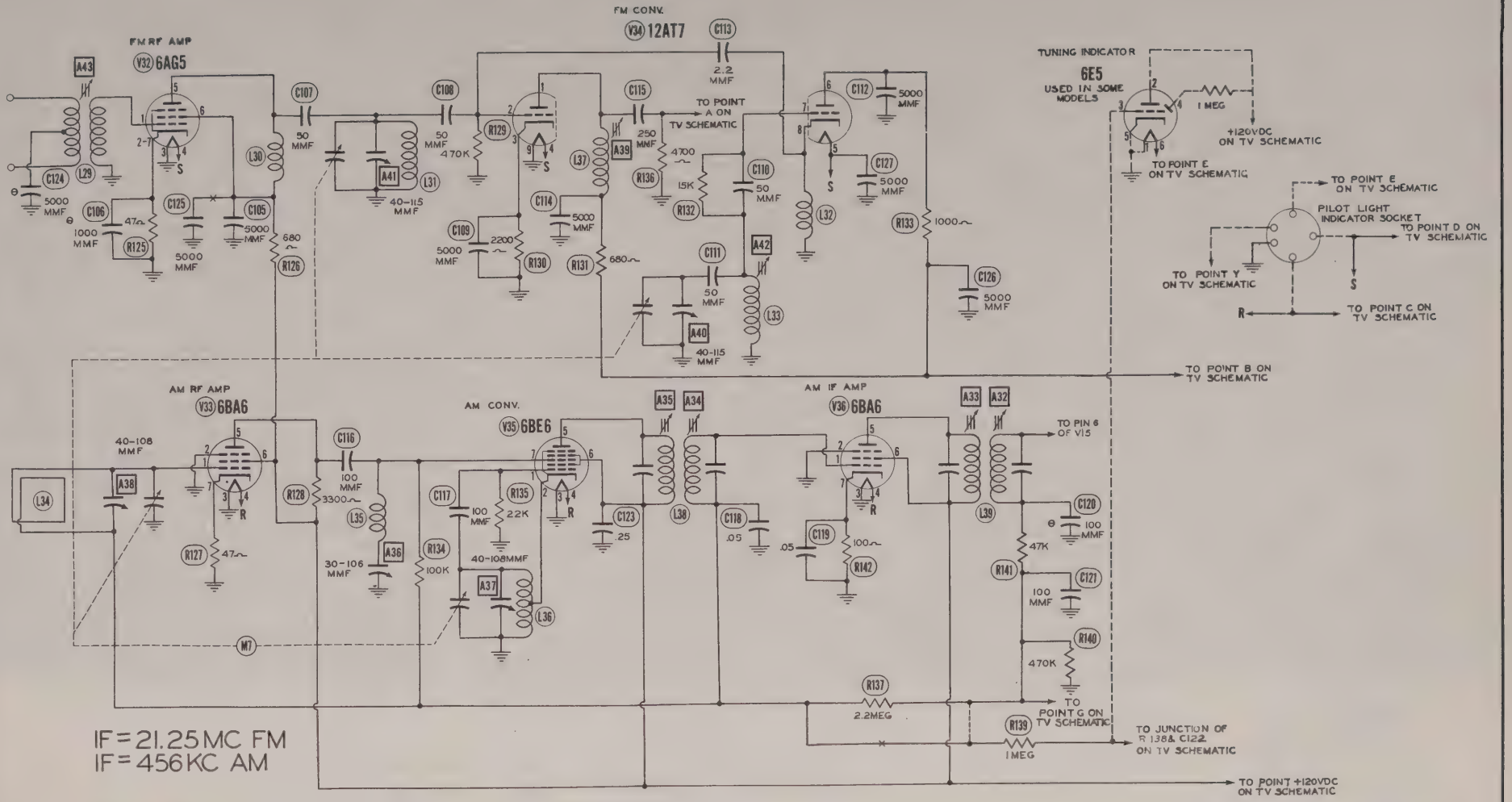
MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M4	RF Tuner	T-30-22	
M5	Switch	T-95-1A	Function (FM, AM, Phono TV)
M6	Ion Trap		
M7	Tuning Cap	40-114B	(28-425MMF, 26-220MMF)
B3	Trimmer	40-103	280-1050MMF (Horiz. Drive)
A38	Trimmer	40-108	AM Ant.
A41	Trimmer	40-115	FM RF (2.5-13MMF)
A40	Trimmer	40-115	FM Osc. (2.5-13MMF)
A37	Trimmer	40-108	AM Osc.



AM-FM TUNER - BOTTOM VIEW

REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36


FM RF AMP
V32 6AG5
FM CONV.
V34 12AT7
TUNING INDICATOR
6E5
USED IN SOME MODELS
1 MEG
+120VDC ON TV SCHEMATIC
TO POINT E ON TV SCHEMATIC
TO POINT A ON TV SCHEMATIC
PILOT LIGHT INDICATOR SOCKET
TO POINT D ON TV SCHEMATIC
TO POINT Y ON TV SCHEMATIC
TO POINT C ON TV SCHEMATIC
TO POINT B ON TV SCHEMATIC
AM RF AMP
V33 6BA6
AM CONV.
V35 6BE6
AM IF AMP
V36 6BA6
TO PIN 6 OF V15
TO POINT G ON TV SCHEMATIC
TO JUNCTION OF R138 & C122 ON TV SCHEMATIC
TO POINT +120VDC ON TV SCHEMATIC
IF = 21.25 MC FM
IF = 456 KC AM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REGAL MODELS 17HD31, 17HD36, 19C31, 19C36, 19D31, 19D36, 20C31, 20C36, 20D31, 20D36, 20HD31, 20HD36

AM FM TUNER SCHEMATIC

PHOTOFACT* Folder

SPARTON MODELS
5170, 5171 (Ch. 25SD201)

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MODEL 5171

SPARTON MODELS
5170, 5171 (Ch. 25SD201)

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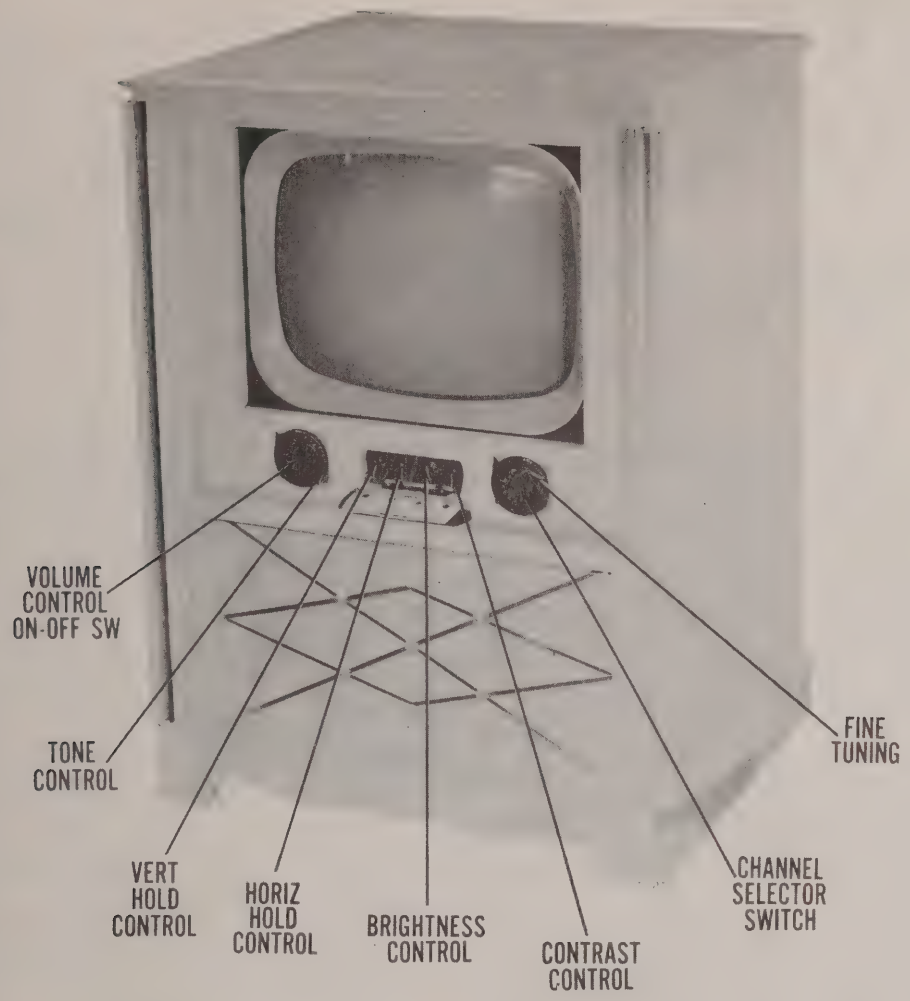
DATE 10-51 SET 147 FOLDER 11

SPARTON MODELS 5170, 5171 (Ch. 25SD201)



SPARTON MODELS 5170, 5171 (Ch. 25SD201)

SPARTON MODEL 5171

TRADE NAME	Sparton Models 5170, 5171 (TV Ch. 25SD201 and Power Supply Ch. 2SD201)
MANUFACTURER	Sparks-Withington Co., Jackson, Mich.
TYPE SET	Television Receiver
TUBES	Twenty seven
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.4 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

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Voltage and Resistance Measurements 8

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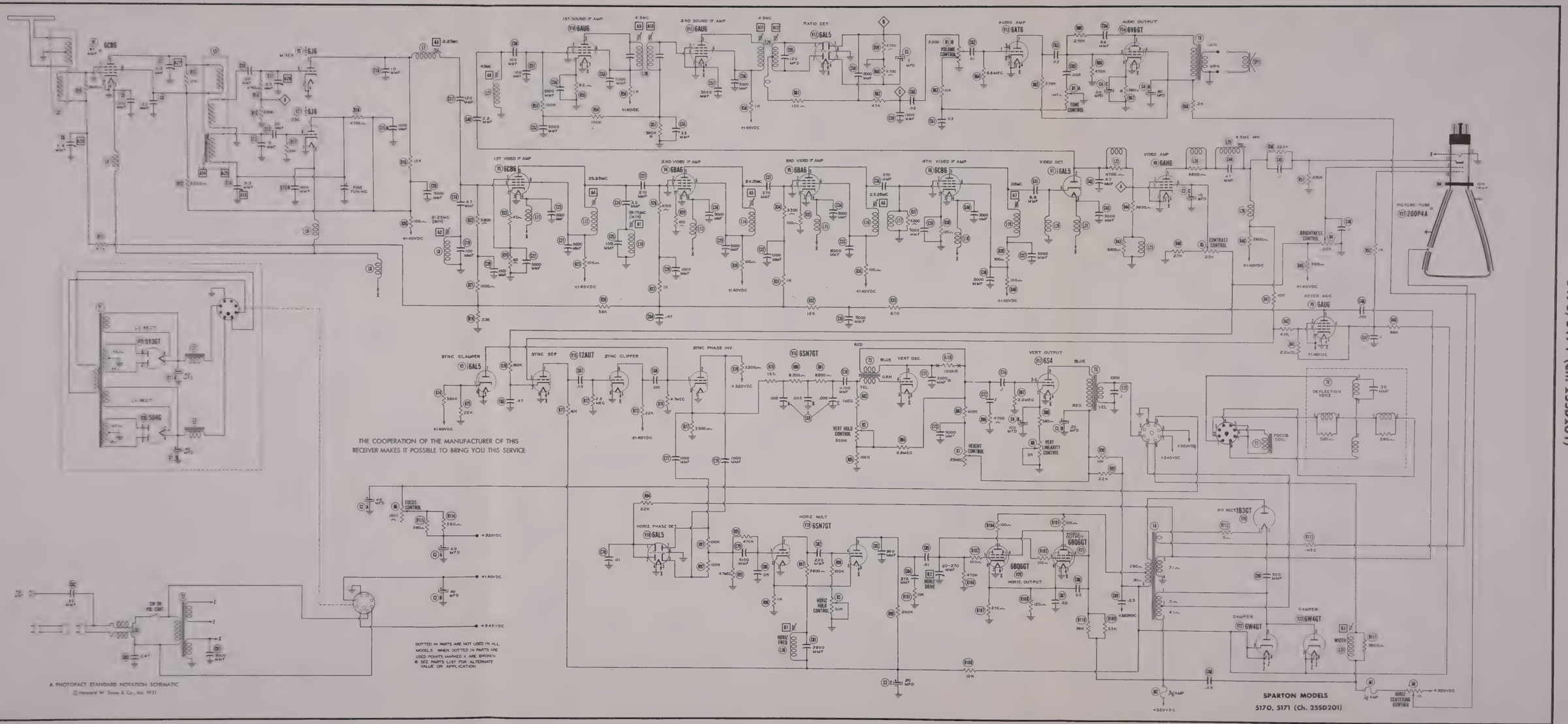
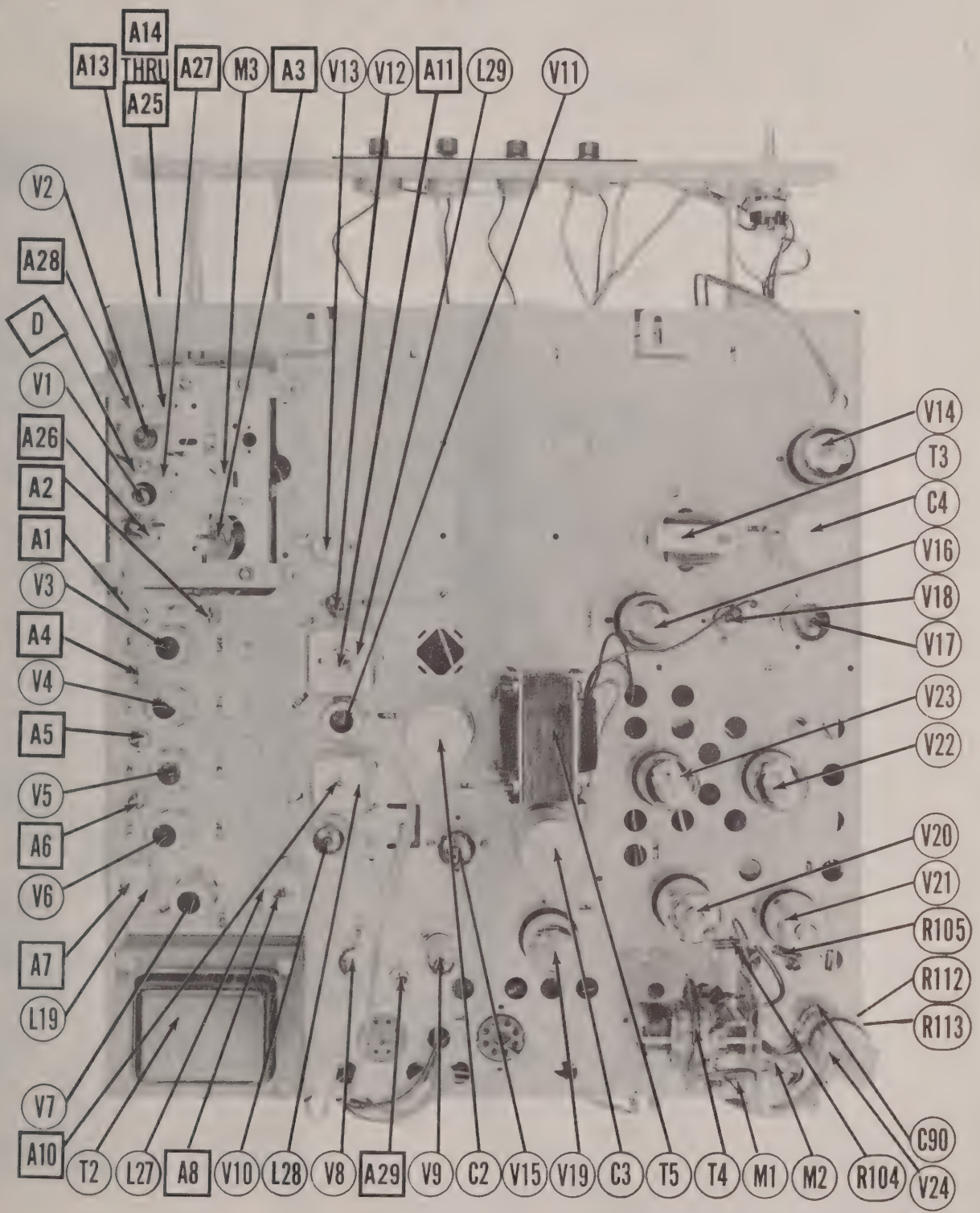
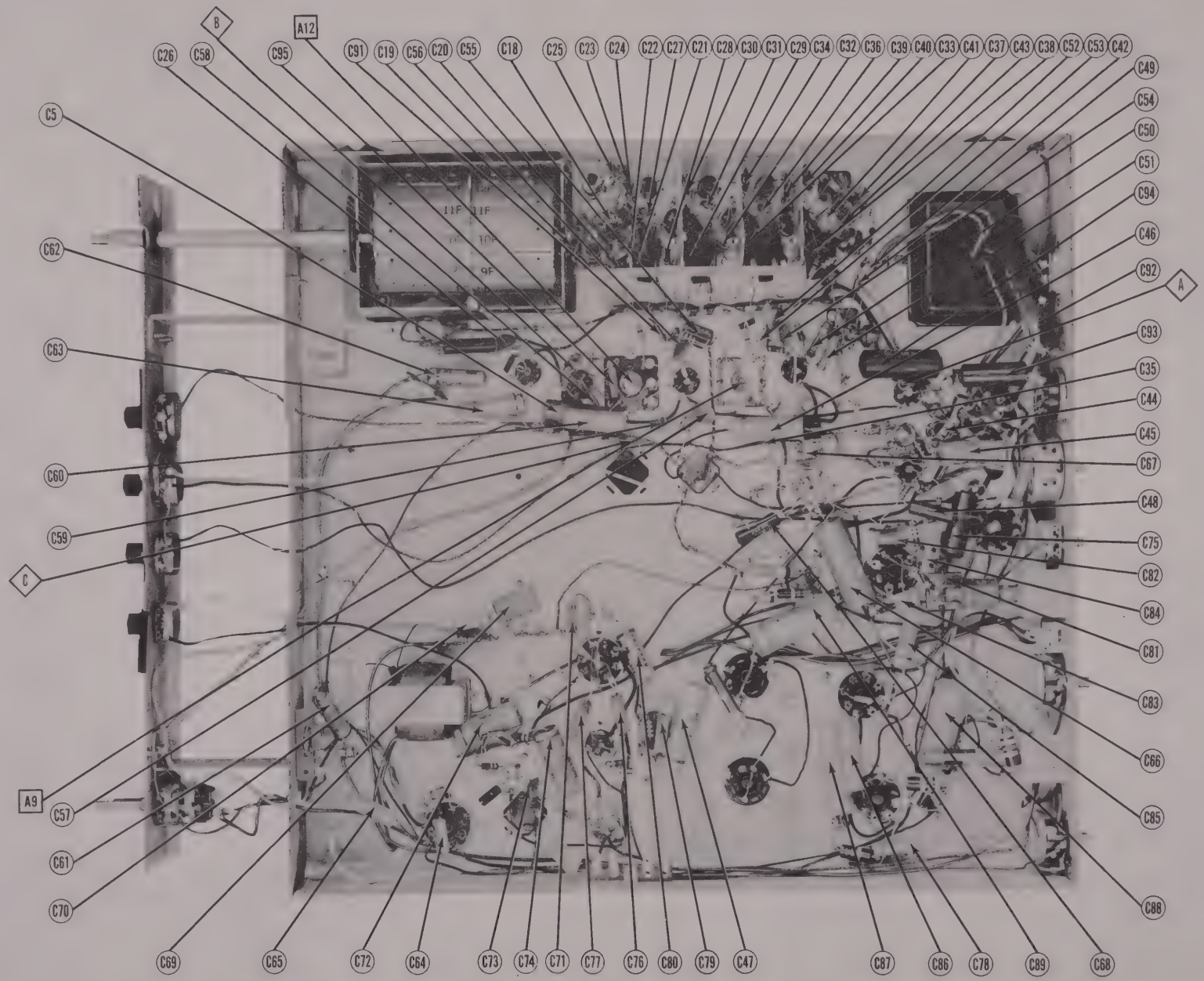
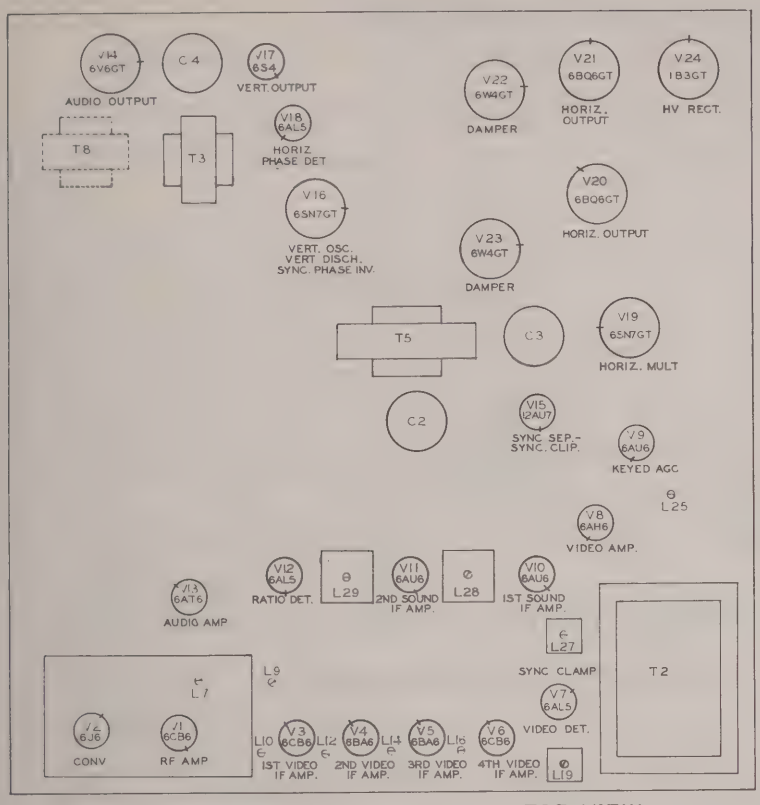

SPARTON MODELS
5170, 5171 (Ch. 255D201)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED ✳ ARE BROKEN
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1951
SPARTON MODELS
5170, 5171 (Ch. 255D201)



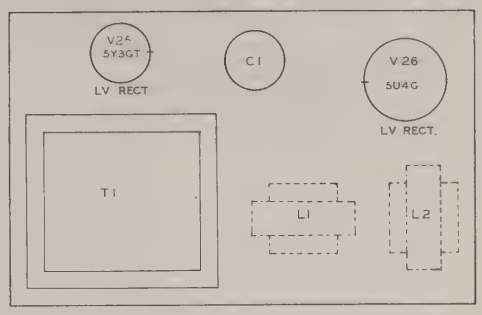
CHASSIS TOP VIEW

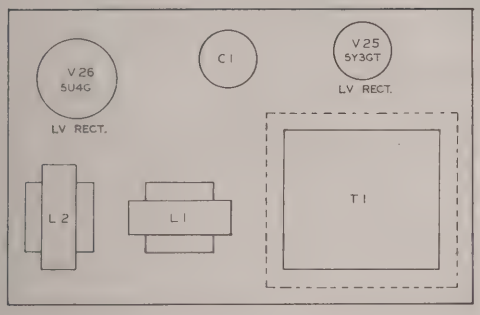


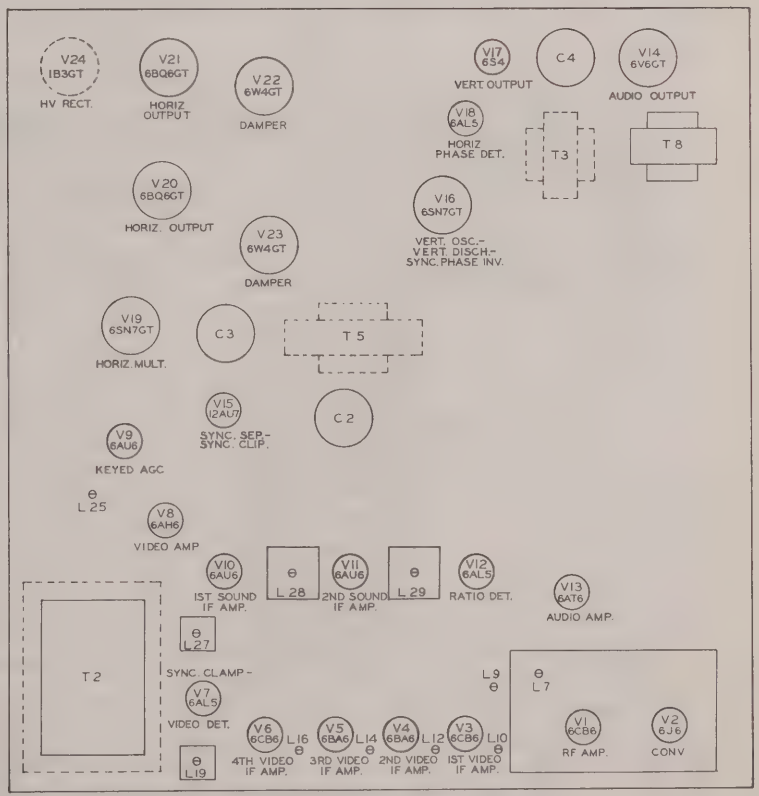
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW







BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V19), from the socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 4.5 volt battery to the ungrounded lead of C94, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	27.75MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	21.75MC	"	"	A2	"
3.	"	"	22.5MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	25.25MC	"	"	A4	"
5.	"	"	24.25MC	"	"	A5	"
6.	"	"	23.25MC	"	"	A6	"
7.	"	"	26MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	22.7MC 25.5MC 26.25MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A3 thru A7 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A8, A9, A10, A11	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point (C). Low side to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to point A. Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A8, A9, A10, A11	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
10.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A12	Reconnect capacitor C5. Adjust A12 so 4.5 MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A13. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A13 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screws are accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic inpedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A14	Adjust to place video marker at 50% as shown in fig. 4
			207MC (10MC SWP)	205.25MC 209.75MC	12		A15	
			201MCq (10MC SWP)	199.25MC 203.75MC	11		A16	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A17	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A18	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A19	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A20	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A21	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A22	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A23	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A24	
			57MC (10MC SWP)	55.25MC 54.75MC	2		A25	

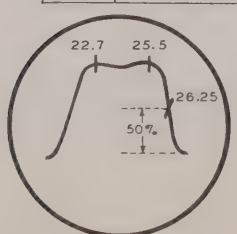


FIG. 1

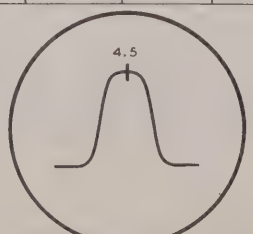


FIG. 2

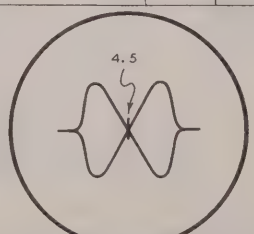


FIG. 3

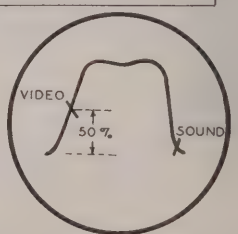


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207 MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point ◇. Low side to chassis.	A26, A27, A28	Adjust for response curve similar to fig. 5 with markers above 90%.
13.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 5. If markers fall below 70% on any channel make slight adjustment of A26, A27, and A28 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			185MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	.01MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (Fig. 6), to pin 11 of picture tube. Common to chassis.	A29	Adjust for MINUMUM deflection.

AFTER ALIGNMENT IS COMPLETE, RESTORE SET TO ORIGINAL OPERATION AND TUNE IN A TEST PATTERN. RETOUCH A29 FOR MAXIMUM VERTICAL WEDGE DEFINITION.

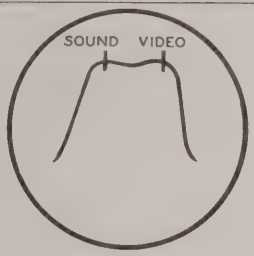


FIG. 5

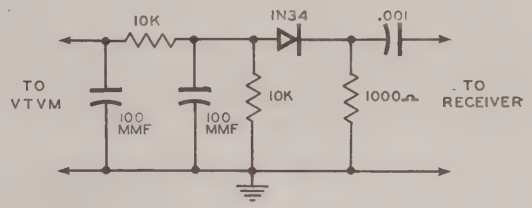


FIG. 6

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding appearing in the left center of the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove nine wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect antenna terminal strip.
5. Disconnect power supply chassis plug.
6. Disconnect speaker.
7. Disconnect yoke socket.
8. Disconnect picture tube socket.
9. Disconnect high voltage lead.
10. Remove four 3/8" hex head bolts from main chassis. Remove chassis.
11. Remove two 3/8" hex head bolts from power supply chassis. Remove chassis.
12. Remove four 11/32" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.5VDC	0V	6.3VAC	0V	100VDC	100VDC	0V		
V 2	6J6	95VDC	90VDC	6.3VAC	0V	-1.8VDC	§-3.8VDC	0V		
V 3	6CB6	-.1VDC	4VDC	0V	6.3VAC	130VDC	135VDC	.5VDC		
V 4	6BA6	-.1VDC	0V	0V	6.3VAC	130VDC	135VDC	1.2VDC		
V 5	6BA6	-.1VDC	0V	0V	6.3VAC	130VDC	135VDC	1.4VDC		
V 6	6CB6	0V	1.5VDC	0V	6.3VAC	130VDC	135VDC	0V		
V 7	6AL5	11VDC	-1VDC	0V	6.3VAC	0V	0V	-4VDC		
V 8	6AH6	-.5VDC	0V	0V	6.3VAC	60VDC	50VDC 100VDC	0V		
V 9	6AU6	80VDC	135VDC	0V	6.3VAC	-1.5VDC	490VDC	135VDC		
V 10	6AU6	-.1VDC	0V	6.3VAC	0V	125VDC	130VDC	.6VDC		
V 11	6AU6	-.5VDC	0V	0V	6.3VAC	130VDC	130VDC	0V		
V 12	6AL5	-2.2VDC	9VDC	0V	6.3VAC	9VDC	0V	-11VDC		
V 13	6AT6	-.1VDC	0V	0V	6.3VAC	0V	0V	65VDC		
V 14	6V6GT	0V	6.3VAC	240VDC	250VDC	0V	0V	0V	14VDC	
V 15	12AU7	395VDC	65VDC	130VDC	6.3VAC	6.3VAC	130VDC	-4VDC	0V	0V
V 16	6SN7GT	-11VDC	340VDC	2.5VDC	-4VDC	35VDC 300 VDC	0V	0V	6.3VAC	
V 17	6S4	0V	11VDC	0V	6.3VAC	0V	0V	0V	0V	290VDC
V 18	6AL5	.1VDC	.1VDC	6.3VAC	0V	22VDC	0V	-18VDC		
V 19	6SN7GT	.2VDC	350VDC	13VDC	-9VDC	135VDC	13VDC	0V	6.3VAC	
V 20	6BQ6GT	0V	0V	0V	120VDC	-7VDC	-7VDC	6.3VAC	12VDC	Top Cap *
V 21	6BQ6GT	0V	0V	0V	120VDC	-7VDC	0V	6.3VAC	12VDC	Top Cap *
V 22	6W4GT	0V	0V	490VDC	0V	320VDC	0V	490VDC	490VDC	
V 23	6W4GT	0V	0V	490VDC	460VDC	320VDC	0V	490VDC	490VDC	
V 24	1B3GT	* DO NOT MEASURE.								
V 25	5Y3GT	0V	150VDC	0V	185VAC	0V	185VAC	0V	150VDC	
V 26	5U4G	0V	380VDC	0V	380VAC	0V	380VAC	0V	380VDC	
V 27	20DP4A	6.3VAC	0V 100VDC	Pin 10 480VDC	Pin 11 75VDC	Pin 12 0V	H.V. CONNECTOR			** 12KV

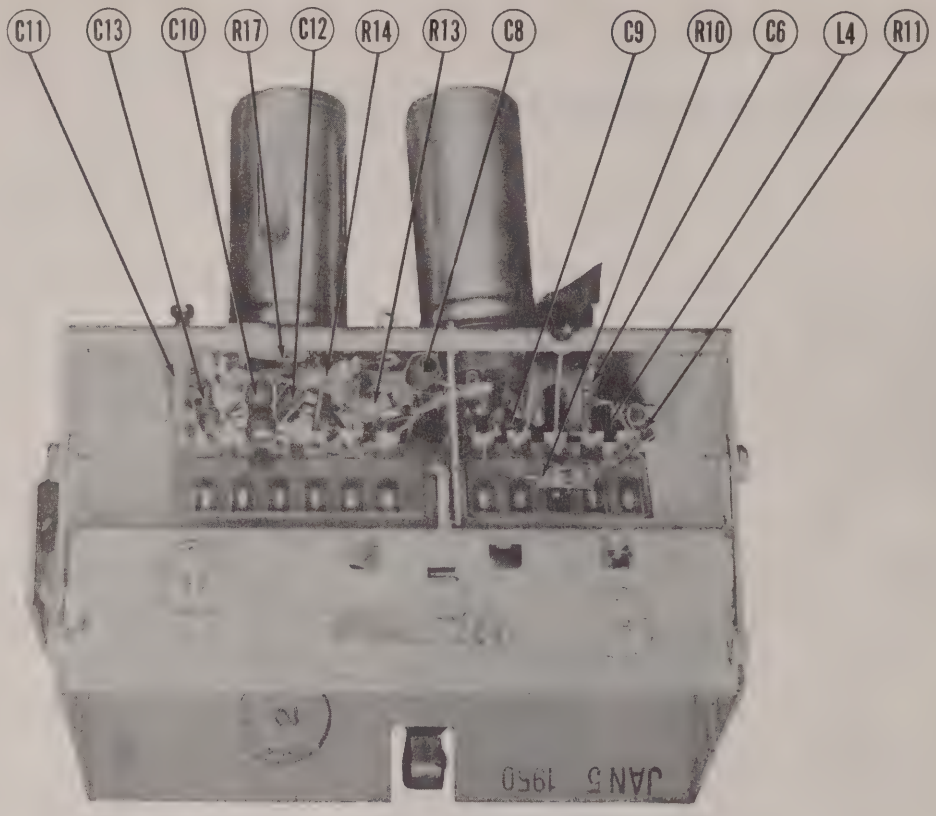
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
* DO NOT MEASURE.
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

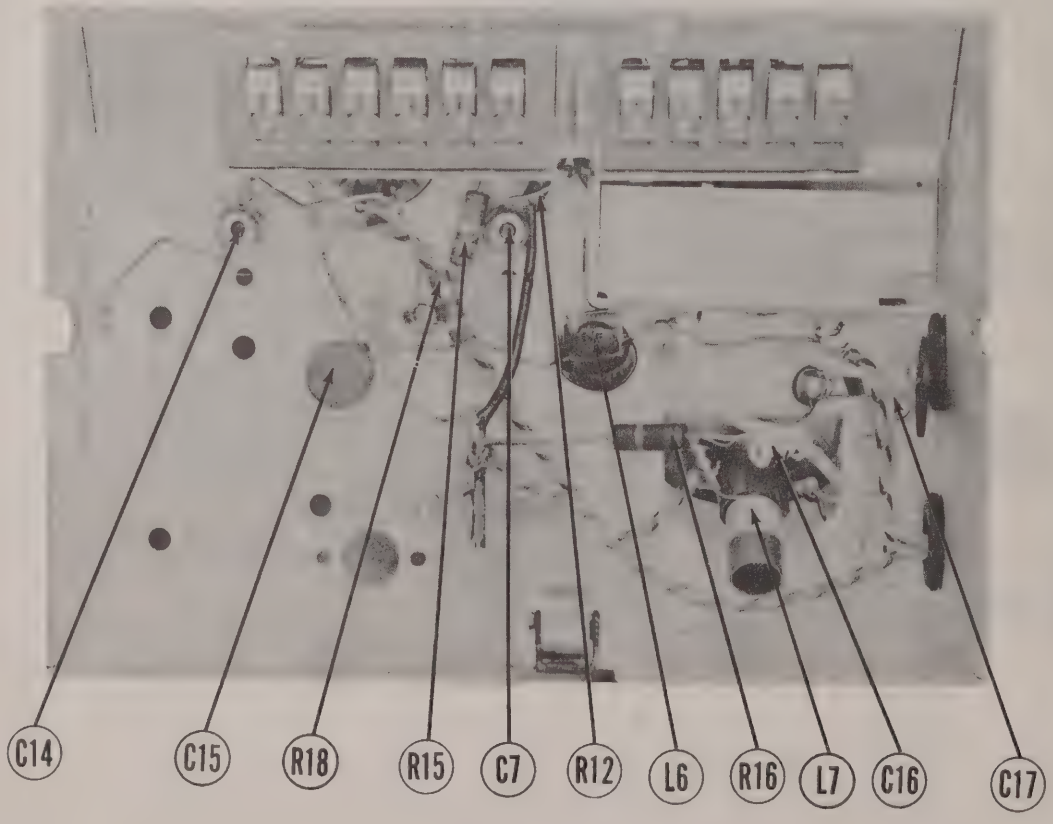
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	80KΩ	0Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 2	6J6	†4.7KΩ	†15KΩ	.1Ω	0Ω	220K	10KΩ	0Ω		
V 3	6CB6	40KΩ	130Ω	0Ω	.1Ω	†250Ω	†250Ω	82Ω		
V 4	6BA6	100KΩ	0Ω	0Ω	.1Ω	†250Ω	†250Ω	100Ω		
V 5	6BA6	100KΩ	0Ω	0Ω	.1Ω	†250Ω	†250Ω	100Ω		
V 6	6CB6	2.5Ω	120Ω	0Ω	.1Ω	†350Ω	†250Ω	0Ω		
V 7	6AL5	22KΩ	4.7KΩ	0Ω	.1Ω	3Ω	0Ω	4.7Meg		
V 8	6AH6	4.7KΩ	0Ω	0Ω	.1Ω	†6.5KΩ	†25KΩ †6KΩ	0Ω		
V 9	6AU6	†65KΩ	†125Ω	0Ω	.1Ω	140KΩ	▲68KΩ	†125Ω		
V 10	6AU6	650KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†1.2KΩ	82Ω		
V 11	6AU6	400KΩ	0Ω	0Ω	.1Ω	†1.2KΩ	†1.2KΩ	0Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	4.7KΩ	0Ω	4.7KΩ		
V 13	6AT6	6.8Meg	0Ω	0Ω	.1Ω	Inf.	Inf.	#300KΩ		
V 14	6V6GT	Inf.	.1Ω	#3KΩ	#2.7KΩ	470KΩ	750KΩ	0Ω	360Ω	
V 15	12AU7	▲30KΩ	†16KΩ	†190KΩ	.1Ω	.1Ω	†22KΩ	2.2Meg	0Ω	0Ω
V 16	6SN7GT	4.7Meg	#4KΩ	3.3KΩ	1.1Meg 1.6Meg	▲110KΩ ▲2.5Meg	0Ω	0Ω	.1Ω	
V 17	6S4	Inf.	390Ω 5K	2.2Meg	.1Ω	0Ω	2.2Meg	Inf.	Inf.	▲8KΩ
V 18	6AL5	22KΩ	22KΩ	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 19	6SN7GT	5.2Meg	▲18KΩ	1KΩ	100KΩ 150KΩ	▲210KΩ	1KΩ	0Ω	.1Ω	
V 20	6BQ6GT	Inf.	0Ω	Inf.	#18KΩ	470KΩ	470KΩ	.1Ω	90Ω	Top Cap ▲160KΩ
V 21	6BQ6GT	Inf.	0Ω	Inf.	#18KΩ	470KΩ	0Ω	.1Ω	90Ω	Top Cap ▲160KΩ
V 22	6W4GT	Inf.	Inf.	1Meg	Inf.	#300Ω #500Ω	Inf.	▲0Ω	▲.2Ω	
V 23	6W4GT	Inf.	Inf.	1Meg	▲68KΩ	#300Ω #500Ω	Inf.	▲0Ω	▲.2Ω	
V 24	1B3GT	PINS 1 THRU 8 HAVE INF. RESISTANCE.								Top Cap ▲340Ω
V 25	5Y3GT	Inf.	30KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	30KΩ	
V 26	5U4G	Inf.	100KΩ	Inf.	40Ω	Inf.	45Ω	Inf	100KΩ	
V 27	20DP4A	.1Ω	0Ω 30KΩ	Pin 10 ▲69KΩ	Pin 11 190KΩ	Pin 12 0Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
† MEASURED FROM PIN 2 OF V25.
# MEASURED FROM PIN 8 OF V26.
▲ MEASURED FROM PIN 3 OF V22.

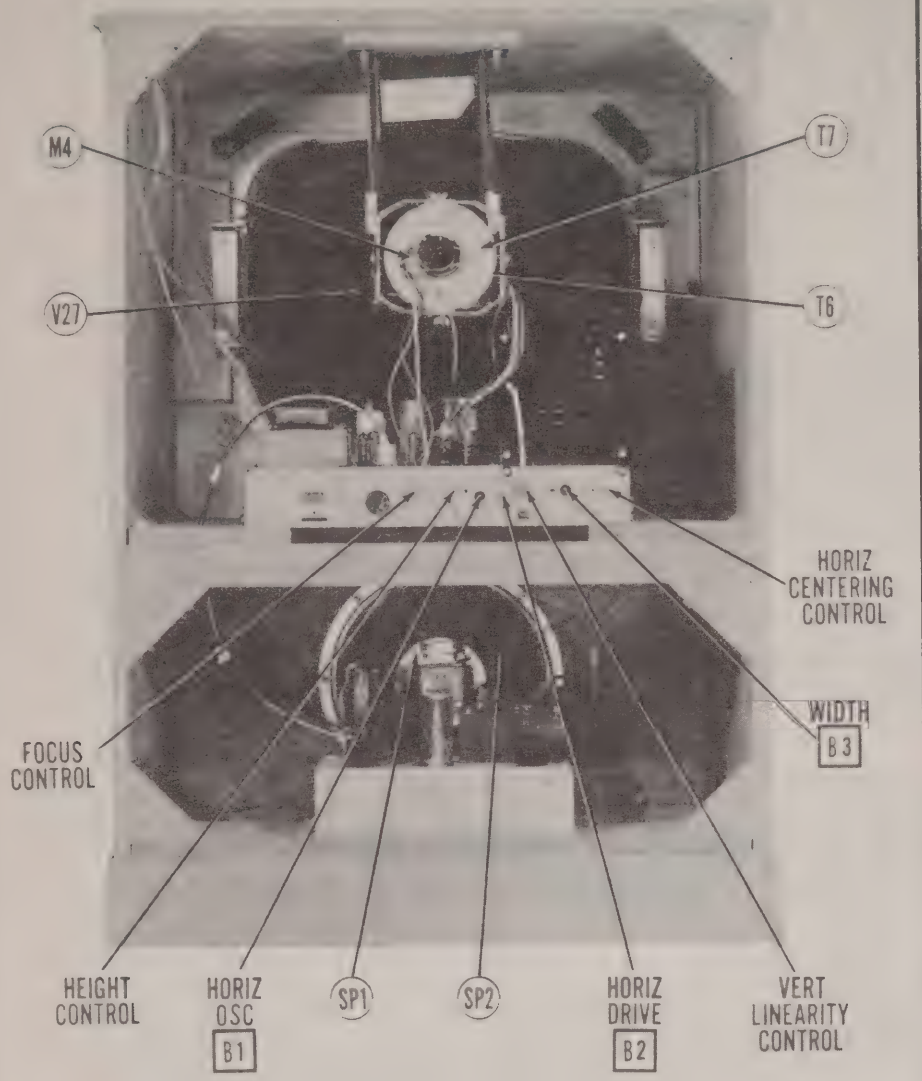
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



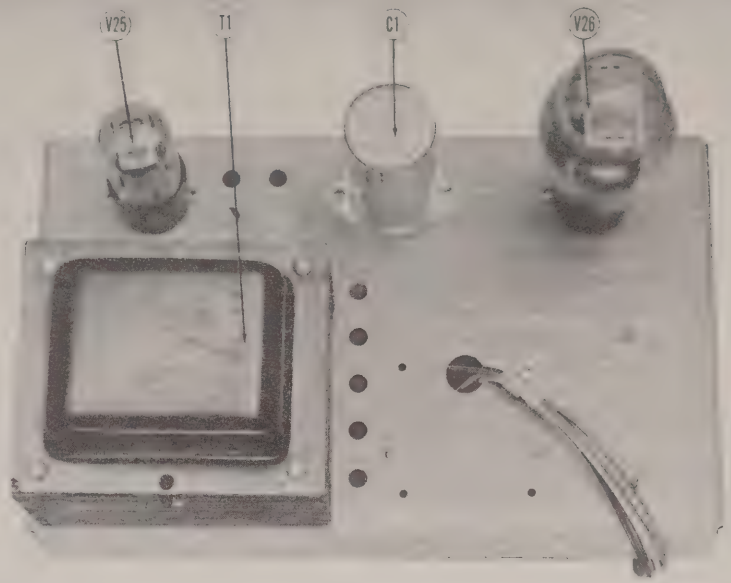
RF TUNER-RIGHT SIDE



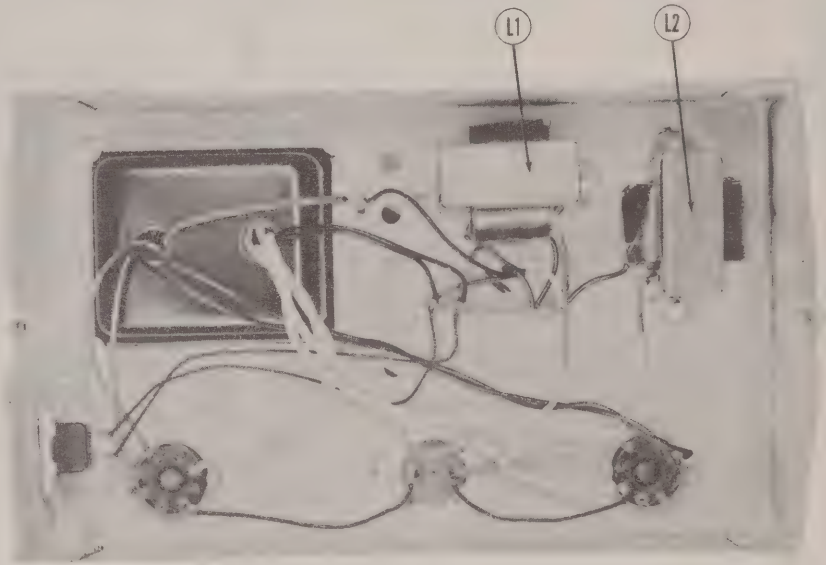
RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SPARTON PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6BA6	6BA6	7BK	
V5	3rd. Video IF Amp.	6BA6	6BA6	7BK	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector-Sync. Clamp	6AL5	6AL5	6BT	
V8	Video Amplifier	6AH6	6AH6	7BK	
V9	Keyed AGC	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	Audio Amplifier	6AT6	6AT6	7BT	
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	Sync. Separator-Sync. Clipper	12AU7	12AU7	9A	
V16	Sync. Phase Inv.-Vert. Oscillator-Vert. Disch.	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6S4	6S4	9AC	
V18	Horiz. Phase Det.	6AL5	6AL5	6BT	
V19	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V21	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V22	Damper	6W4GT	6W4GT	4CG	
V23	Damper	6W4GT	6W4GT	4CG	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25	LV Rectifier	5Y3GT	5Y3GT	5T	
V26	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SPARTON PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V27A	20DP4A	20DP4A		12D	
B	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	PA4309-24	AFH2-101		UPT4445		TVL-2830	▲ Filter
B	40	250							▲ Filter
C2A	40	475	PA4307-25	AFH3-54		UPT44150		TVL-2830	▲ Filter
B	40	250						TVA-1504	■ Filter
C	10	250							▲ Video Amp. Screen
C3A	40	475	PA4307-22	AFH8422J		UPT42145		TVL-4840	▲ Decoupling
B	20	450							■ Vert. Output Dec.
C	20	450							▲ Horiz. MV Dec.
C4A	80	450	PA4307-23	AFH16J204B		UPT4445		TVL-2710	▲ Audio Output Dec.
B	100					V10			
B	100	50				BR205A		TVA-1310	■ Vert. Output Cathode
C	20	50							▲ Audio Output Cathode
C5	5	50	PA4308-2	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C6	3-9				825-10				Variable Trimmer
C7	5-3				829-3				Variable Trimmer
C8	120			SII20	D6-121		GP2K-121	5GA-T12	RF Amp. Dec.
C9	1000			SII000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C10	100			SII00N750	TCN-100		N750L-101	5TCU-T1	RF Coupling
C11	5-3				829-3				Variable Trimmer
C12	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C13	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C14	5-3				829-3				Variable Trimmer
C15A	1000			BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Bypass
B	1000								Conv. Fil.
C16	10			SII0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C17	120				TCN-120		N750L-121		IF Coupling
C18	4.7			SI4.7NP0	TCZ-4.7		NP0K-4R7		Fixed Trimmer
C19	100			SII00NP0	TCZ-100		NP0-333-101	5TCC-T1	Fixed Trimmer
C20	1000			SII000	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C21	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec.
C22	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Cathode
C23	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Fil.
C24	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3		Fixed Trimmer
C25	100			SI00NP0	TCZ-100		NP0-333-101	5TCC-T1	Fixed Trimmer
C26	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C27	270			SI270	D6-271	5RST3	GP2K-271	5GA-T27	IF Coupling
C28	1000			SI000	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C29	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C30	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Fil.
C31	270			SI270	D6-271	5RST3	GP2K-271	5GA-T27	IF Coupling
C32	1000			SI000	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C33	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C34	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Fil.
C35	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C36	270			SI270	D6-271	5RST3	GP2K-271	5GA-T27	IF Coupling
C37	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Plate
C38	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Screen
C39	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Cathode
C40	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Fil.
C41	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8		IF Coupling
C42	4.7			SI4.7NP0	TCZ-4.7		NP0K-4R7		Video Det. Filter
C43	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.
C44	47				TCZ-47		NP0L-470	5TCC-Q47	Fixed Trimmer
C45	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C46	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Grid
C47	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Decoupling
C48	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C49	2.2				TCZ-2.2		NP0K-2R2		Sound IF Coupling
C50	100			SII00	D6-101	5W5T1	GP1K-101	5GA-T1	Sound IF Coupling
C51	100			SII00	D6-101	5W5T1	GP1K-101	5GA-T1	Voltage Divider
C52	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C53	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Dec.
C54	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Cathode
C55	33	500		SI33	D6-330		GP1K-330	5GA-Q33	2nd. Sound IF Grid
C56	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C57	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Fil.
C58	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C59	1000			SII000	D6-102	1W5D1	GP2L-102	5HK-D1	De-emphasis
C60	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C61	.03	200		P488-03		PTE6S3		6TM-S3	Tone Comp.
C62	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C63	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C64	68	500		1468-00007	D6-680	5W5Q7	GP1K-680	MS-47	Tone Comp.
C65	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C66	.47	200		P288-47		GT2P5		2TM-P47	Sync. Sep. Cathode
C67	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Sync. Coupling
C68	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Sync. Coupling
C69A	.002			P688-002		PTE6D2	GP2-333-202	5HK-D2	Vert. Integrator Net.
B	.005			P688-005	*PC-100	P1E6D5	GP2-333-502	5HK-D5	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502	5HK-D5	Vert. Integrator Net.
C70	4700	500		1464-005		IDR5D5		MS-25	Vert. Osc. Grid Cap.
C71	2000	500		1464-002		IR5D2		MS-22	Vert. Osc. Plate *
C72	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Vert. Dischargea
C73	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Vert. Osc. Dec.
C74	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C75	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Fixed Trimmer
C76	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sync. Coupling
C77	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sync. Coupling
C78	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Net.
C79	5100	500		1464-005		IDR5D5		MS-25	AFC Filter
C80	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C81	3900	500		1464-004		IDR5D4			Fixed Trimmer
C82	220	500		1469-00025		5R5T25			Horiz. MV Feedback
C83	390	500		1469-0004		5R5T4		MS-34	Horiz. MV Plate
C84	275	500		1469-0003		5R5T3		MS-33	Horiz. Discharge
C85	.01	400		P488-01	D6-103	PTE4S1	GP2-33J-103	4TM-S1	Horiz. Sweep Coupling
C86	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Output Screen
C87	.25	200		P488-25		GT4P25		2TM-P25	Horiz. Output Cathode
C88	.25	400		P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C89	.25	400		P488-25		GT4P25		4TM-P25	Damper Filter
C90	500	20000		HV-20C	TV3-502				HV Filter
C91	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Fil. Bypass
C92	30	500		SI30		5W5Q3	GP1K-300	MS-43	Line Filter
C93	.047	600		P688-047	DF-503	PTE6S5		6TM-S5	Line Filter
C94	.47	200		P288-47		GT2P5		2TM-P47	AGC Filter
C95	120	500		1469-00015		5R5T15			Balancing Cap.

* Not used in all models.
♦ This unit may be used to replace items C69B, C69C, R79, R80, R81.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	1/2		Concentrikit			
B	330KΩ	1/2	PA4450	B11-137 ♦ B18-132X ♦		SBBT-661-S	Tone Control - Front Volume Control - Tapped ② 65KΩ - Rear
C	Shaft end			E-187 ♦			Attach per instructions in Concentrikit
D	Switch			76-1 ♦			Attach Per Instructions in Concentrikit
R2A	500KΩ	1/2	PA4451	Q11-133	AG-58-S	B-59	Vert. Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R2 A Per instructions
R3A	50KΩ	1/2	PA4444	Q11-123	AG-44-S	B-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A per instructions
R4A	100KΩ	1/2	PA4445	Q11-128	AG-49-S	B-40	Brightness Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R4A per instructions
R5A	25KΩ	1/2	PA4442-1	Q11-120	AG-40-S	B-26	Contrast Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R5A per instructions
R6	1500Ω	4	PA4426-1		RTV-6	SVP-994	Focus Control - Wire Wound
R7A	2.5Meg	1/2	PA4431	Q11-239	AG-48-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R7A per instructions
R8	5000Ω	2	PA4411	W-5000	43-5000	VK-135	Vert. Linearity Control - Wire Wound
R9	1000Ω	2	PA4446	W-1000	43-1000	VK-129	Horiz. Centering Control - Wire Wound

♦ Additional Parts to be used with Concentrikit.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R10	3900Ω			BTS-3900	Antenna Coil Shunt
R11	47KΩ	20%		BTS-47K	AGC Network
R12	2200Ω	20%		BTS-2200	RF Amp. Decoupling
R13	10KΩ			BTS-10K	RF Coil Shunt
R14	4700Ω			BTS-4700	Mixer Grid
R15	220KΩ	20%		BTS-220K	Mixer Grid
R16	15KΩ	20%			Mixer Plate
R17	10KΩ			BTS-10K	Osc. Grid
R18	4700Ω			BTS-4700	Osc. Plate
R19	33KΩ			BTS-33K	AGC Network
R20	56KΩ			BTS-56K	AGC Network
R21	1000Ω	20%		BTS-1000	AGC Network
R22	5600Ω			BTS-5600	1st. Video IF Amp. Grid
R23	47Ω	5%			1st. Video IF Amp. Cathode
R24	82Ω	5%		BTS-82-5%	1st. Video IF Amp. Cathode
R25	100Ω	20%		BTS-100	1st. Video IF Amp. Decoupling
R26	100Ω	20%		BTS-100	Decoupling
R27	1000Ω	20%		BTS-1000	AGC Network
R28	4700Ω	5%		BTS-4700-5%	2nd. Video IF Amp. Grid
R29	100Ω	20%		BTS-100	2nd. Video IF Amp. Cathode
R30	100Ω	20%		BTS-100	2nd. Video IF Amp. Decoupling
R31	1000Ω	20%		BTS-1000	AGC Network
R32	15KΩ	5%		BTS-15K-5%	AGC Network
R33	27KΩ			BTS-27K	AGC Network
R34	3300Ω	5%		BTS-3300-5%	3rd. Video IF Amp. Grid
R35	100Ω	20%		BTS-100	3rd. Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	IDENTIFICATION CODES
R36	100Ω	20%		BTS-100	3rd. Video IF Amp. Decoupling
R37	4300Ω	5%			RF Choke Coil Shunt
R38	120Ω			BTS-120	4th. Video IF Amp. Cathode
R39	100Ω	20%		BTS-100	4th. Video IF Amp. Plate
R40	100Ω	20%		BTS-100	4th. Video IF Amp. Decoupling
R41	2.2Meg			BTS-2.2Meg	Keyed AGC Grid
R42	47KΩ			BTS-47K	Isolation
R43	6800Ω			BTS-6800	Video Peaking Coil Shunt
R44	3900Ω	5%		BTS-3900-5%	Video Det. Diode Load
R45	5100Ω	5%			Video Amp. Screen
R46	5600Ω	5%	1	BTA-5600	Video Amp. Plate
R47	10KΩ			BTS-10K	Isolation
R48	27KΩ			BTS-27K	Voltage Divider
R49	68KΩ		1	BTA-68K	Voltage Divider
R50	220KΩ			BTS-220K	Isolation
R51	470KΩ			BTS-470K	Picture Tube Cathode
R52	1000Ω	20%		BTS-1000	Acc. Anode Load
R53	100KΩ			BTS-100K	1st. Sound IF Amp. Grid
R54	100KΩ	20%		BTS-100K	1st. Sound IF Amp. Grid
R55	82Ω	5%		BTS-82-5%	1st. Sound IF Amp. Cathode
R56	1000Ω	20%		BTS-1000	1st. Sound IF Amp. Decoupling
R57	390KΩ		1	BTA-390K	2nd. Sound IF Amp. Grid - See Note 1
R58	1000Ω	20%		BTS-1000	2nd. Sound IF Amp. Decoupling
R59	4700Ω	5%		BTS-4700-5%	Ratio Det. Diode Load
R60	4700Ω	5%		BTS-4700-5%	Ratio Det. Diode Load
R61	150Ω	5%		BTS-150-5%	Balancing
R62	47KΩ			BTS-47K	De-emphasis
R63	10KΩ			BTS-10K	Tone Compensation
R64	6.8Meg	20%		BTS-6.8Meg	AF Amp. Grid
R65	270KΩ			BTS-270K	AF Amp. Plate
R66	470KΩ			BTS-470K	Output Grid
R67	360Ω	5%	1		Output Cathode - See Note 2
R68	2000Ω		5	1 3/4A-2000	Decoupling - Wire Wound
R69	270KΩ			BTS-270K	Feedback
R70	180KΩ			BTS-180K	Sync. Sep. Cathode
R71	18KΩ			BTS-18K	Sync. Sep. Plate
R72	2.2Meg	20%		BTS-2.2Meg	Sync. Clipper Grid
R73	22KΩ	20%		BTS-22K	Sync. Clipper Plate
R74	330KΩ	20%		BTS-330K	Voltage Divider
R75	22KΩ	20%		BTS-22K	Sync. Clamper Diode Load
R76	4.7Meg			BTS-4.7Meg	Sync. Phase Inv. Grid
R77	3300Ω	5%		BTS-3300-5%	Sync. Phase Inv. Cathode
R78	3300Ω	5%		BTS-3300-5%	Sync. Phase Inv. Plate
R79	15KΩ			BTS-15K	Integrator
R80	8200Ω			BTS-8200	Integrator
R81	8200Ω			BTS-8200	Integrator
R82	1Meg	5%		BTS-1Meg	Vert. Osc. Grid
R83	100KΩ			BTS-100K	Vert. Osc. Plate
R84	6.8Meg			BTS-6.8Meg	Voltage Divider
R85	100KΩ			BTS-100K	Voltage Divider
R86	4700Ω			BTS-4700	Vert. Peaking
R87	2.2Meg			BTS-2.2Meg	Vert. Output Grid
R88	390Ω			BTS-390	Vert. Output Cathode
R89	22KΩ	20%	1	BTA-22K	Decoupling
R90	10KΩ		2	BTB-10K	Decoupling
R91	100KΩ			BTS-100K	Horiz. Phase Det. Diode Load
R92	100KΩ			BTS-100K	Horiz. Phase Det. Diode Load
R93	4.7Meg			BTS-4.7Meg	Horiz. Phase Det. Diode Load
R94	22KΩ	20%		BTA-22K	Horiz. Feedback
R95	470KΩ			BTS-470K	Horiz. AFC Filter
R96	1000Ω	20%		BTS-1000	Horiz. MV Cathode
R97	5600Ω	5%		BTS-5600	Horiz. MV Plate
R98	100KΩ			BTS-100K	Horiz. MV Grid
R99	200KΩ	5%			Horiz. MV Plate
R100	10KΩ		2	BTB-10K	Decoupling
R101	10KΩ			BTS-10K	Horiz. Peaking
R102	100Ω	20%			Parasitic Suppressor
R103	100Ω	20%			Parasitic Suppressor
R104	100Ω	20%			Parasitic Suppressor
R105	100Ω	20%			Parasitic Suppressor
R106	470KΩ			BTS-470K	Horiz. Output Grid
R107	270Ω	5%	1	BTA-270	Horiz. Output Cathode
R108	120Ω		2	BW-2-120	Horiz. Output Cathode
R109	33KΩ	20%	2	BTB-33K	Horiz. Output Screen
R110	39KΩ		2	BTB-39K	Horiz. Output Screen
R111	3900Ω		2	BTB-3900	Width Control Shunt
R112	5Ω	5%	1		HV Rectifier Filament
R113	1Meg	20%	1		HV Filter
R114	560Ω		2	BTB-560	Focus Coil Shunt
R115	560Ω		2	BTB-560	Focus Coil Shunt
R116	100KΩ			BTS-100K	Vert. Osc. Transformer - See Note 3

Note 1 Some models use 470KΩ resistor in this application.
Note 2 Some models use 390Ω resistor in this application.
Note 3 Not used in all models.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: SPARTON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.4Ω	PC83000-32	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 7/8"	12 1/4"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.65A	780VCT .200ADC	400VCT .140ADC	5VAC ② 2A SEC. 4 5VAC ② 3A	A81-1021-1			

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	117VAC @ .8A	6.3VAC @ 2.4A	6.3VAC @ 9.6A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	150Ω	820Ω	AB47006-4	A-8111 ①	A-3000	TBO-3 ①	Vert. Block Osc. Trans.
T4	310Ω	4.6Ω	PC70012				Horiz. Output Trans.
	Tap 30Ω	Tap 4.1Ω					
		SEC. 2 3.1Ω					
		SEC. 3 0Ω					
T5	670Ω	6.2Ω	AB41062-5	A-8115 ①	A-3035 ①	TSO-1 ①	Vert. Output Trans.
T6A	12Ω		PC70013	DY-7	MDF-70		Horiz. Deflection Coils
B	33Ω						Vert. Deflection Coils
T7	420Ω		PC70008-1		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	6.4KΩ	3.4Ω	270Ω	.4Ω	AB44066-3	A-3878 ①	A-3019	RO-13 ①	① Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.140A	110Ω	6 Henries	AB47009-2	C-2325①	C-2994	R-7200①	① Drill one new mounting hole.
L2	.200A	110Ω	6 Henries		C-2304	C-2994	R-7200①	

COILS (RF-IF)

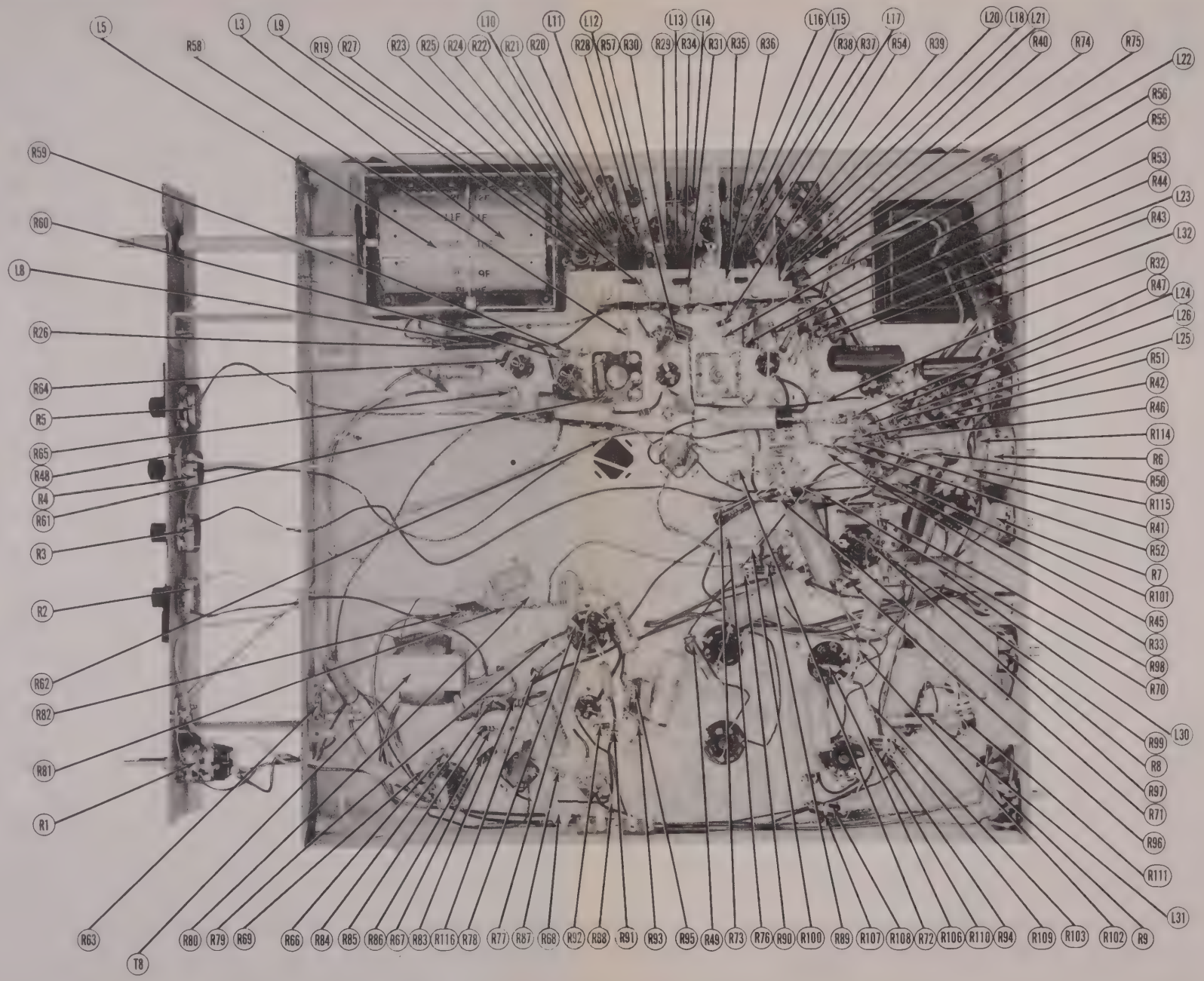
ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA SPARTON PART No.		NOTES
L3	Ant. Coil	0Ω	0Ω			Part of tuner part # PD93156
L4	Fil. Choke	0Ω				Part of tuner part # PD93156
L5	RF Mixer Grid & Osc. Coil	0Ω				Part of tuner part # PD93156
L6	Fil. Choke	0Ω				Part of tuner part # PD93156
L7	1st Video IF	1.1Ω				Part of tuner part # PD93156
L8	Fil. Choke	.1Ω		AA6651-1		
L9	Sound Trap	0Ω		AB43523-12		
L10	Adj. Sound Trap	0Ω		AB43523-12		
L11	Fil. Choke	.1Ω		AA6651-1		
L12	2nd Video IF	.1Ω		AA6364-1		
L13	Fil. Choke	.1Ω		AA6651-1		
L14	3rd Video IF	.1Ω		AA6408-1		
L15	Fil. Choke	.1Ω		AA6651-1		
L16	4th Video IF	.1Ω		AA6408-1		
L17	RF Choke	2.8Ω		AA6650-1		
L18	Fil. Choke	.1Ω		AA6651-1		
L19	5th Video IF	.5Ω		AA6408-1		
L20	RF Choke	2.8Ω		AA6650-1		
L21	Fil. Choke	.1Ω		AA6651-1		
L22	Peaking	8Ω		AA6402-6		146 Microhenries (wound on 4.7KΩ resistor.)
L23	Peaking	18Ω				600 Microhenries
L24	Peaking	10Ω		AA6402-7		213 Microhenries (wound on 6.8K resistor.)
L25	4.5MC Trap	1.8Ω		AA6407-1		
L26	Peaking	16Ω		AA6613-10		420 Microhenries
L27	1st Sound IF	1.7Ω		AA6364-2		
L28	2nd Sound IF	2.1Ω	2.1Ω	AA6667-5		
L29	Ratio Det. Trans.	5Ω	1.2Ω	AA6684-4		Tap 1.2Ω
L30	Horiz. Osc.	65Ω		AA6403-2		
L31	Width Coil	6Ω				
L32	Line Choke	.1Ω	.1Ω	AA6664-1		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SPARTON PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	REMARKS
M1	3AG Pigtail	.062	PA4214-4		318.062		
M2	3AG Pigtail	.375	PA4214-3		318.375		

MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
M3	RF Tuner	PD93156	
M4	Ion Trap	PA1248-3	
B2	Trimmer	PA4368	20-270 MMF.
	Safety Glass	PD93019	
	Knob	PB40328-1	Tone Control
	Knob	PB40333-1	Fine Tuning
	Knob	PB40340	Channel Selector
	Knob	PB40337	Off/On Volume
	Knob	PA5651	4 Required



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

*TRADE MARK

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

TRUETONE
MODELS 2D1190A, B

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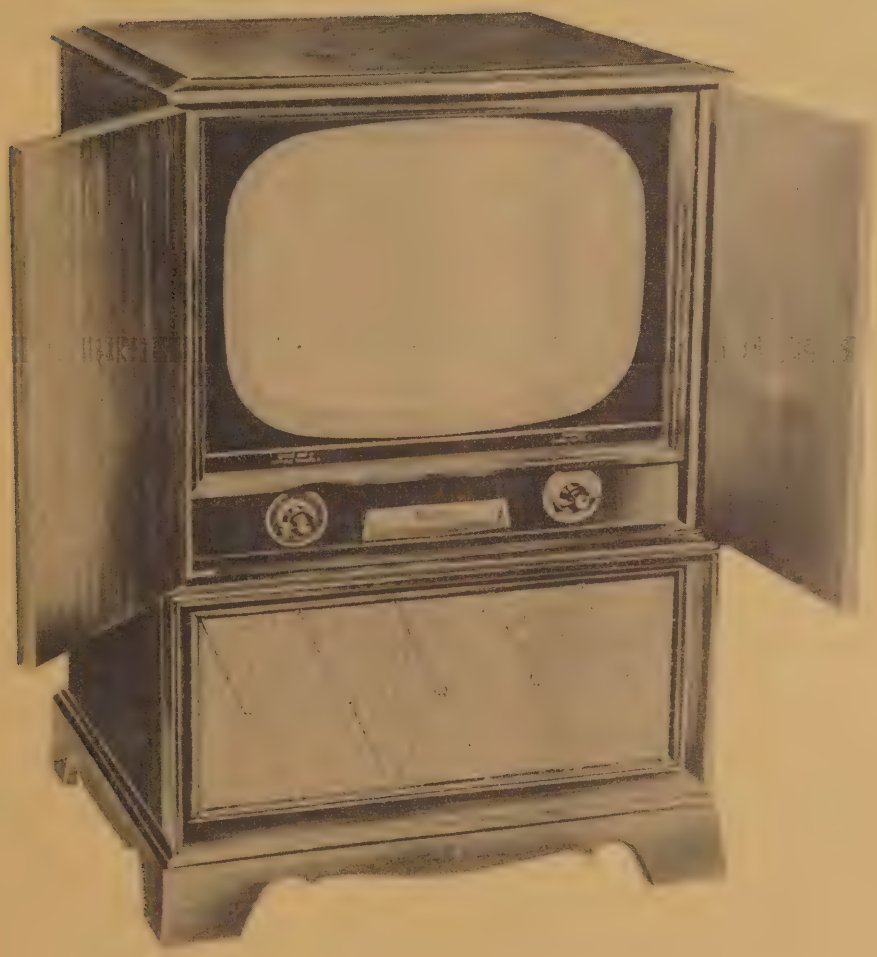
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



TRUETONE
MODELS 2D1190A, B

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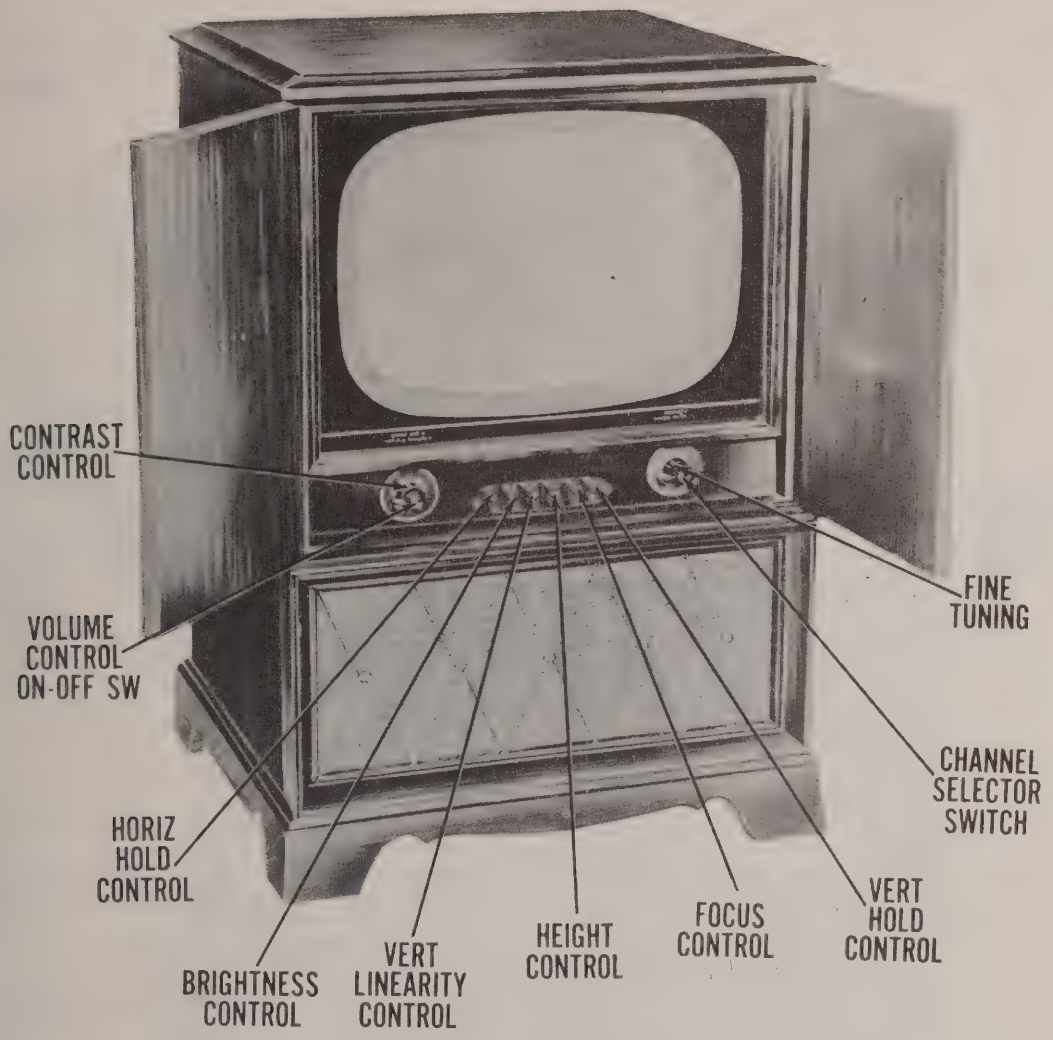
TRUETONE
MODELS 2D1190A, B



TRUETONE
MODELS 2D1190A, B

TRADE NAME	Truetone, Model 2D1190A, B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.1 Amp. at 117 Volts AC
TUNING RANGE—	CHANNELS 2 thru 13

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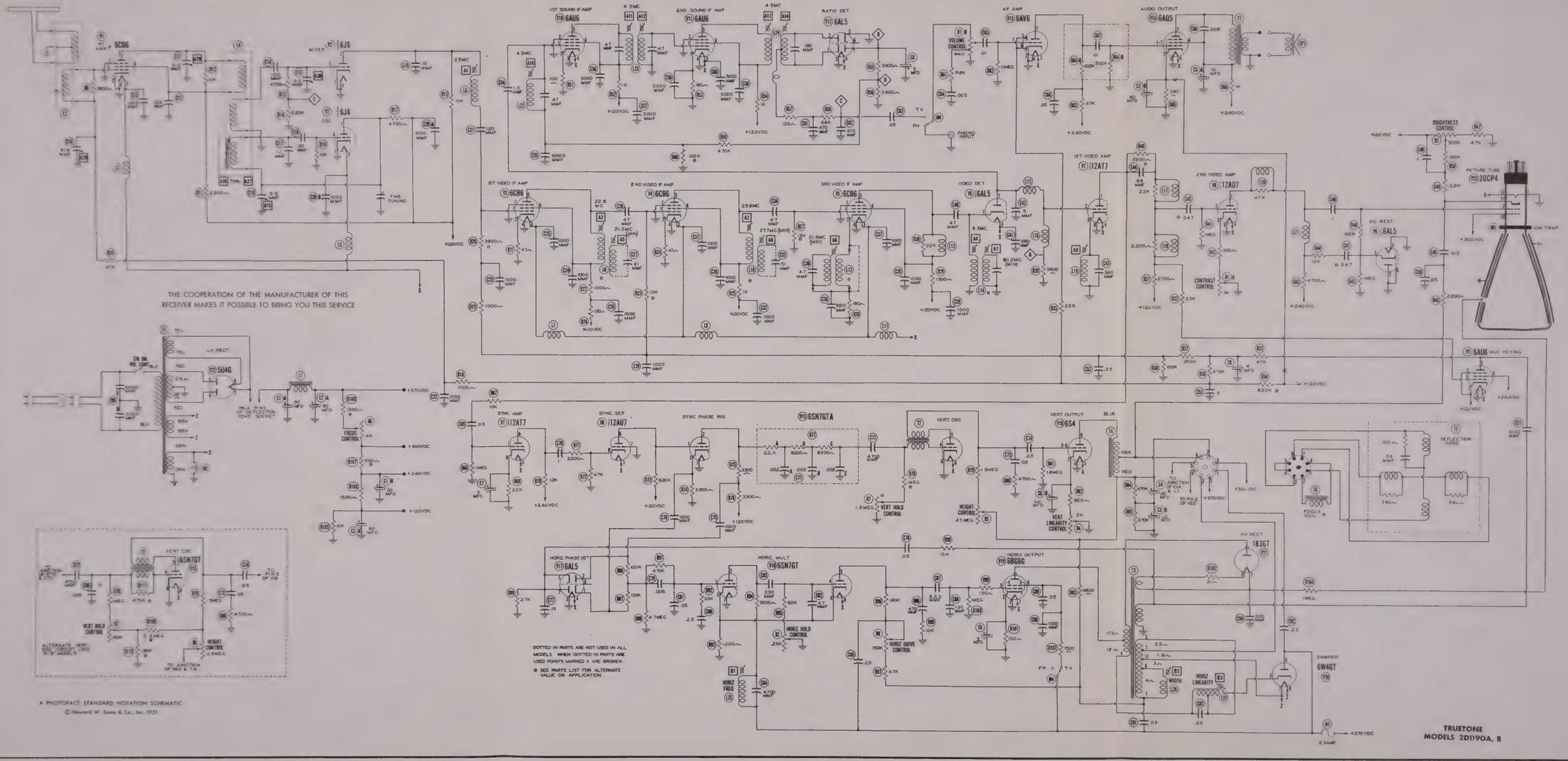
TRUETONE
MODELS 2D1190A, B
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
1ST SOUND IF AMP
2ND SOUND IF AMP
RATIO DET
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET
1ST VIDEO AMP
2ND VIDEO AMP
DC REST
BRIGHTNESS CONTROL
PICTURE TUBE
ION TRAP
SYNC. AMP
SYNC. SEP.
SYNC PHASE INV.
VERT. OSC.
VERT OUTPUT
HORIZ PHASE DET.
HORIZ. MULT.
HORIZ OUTPUT
HV RECT
DAMPER
DEFLECTION YOKE
FOCUS COIL
AGC KEYING
VOLUME CONTROL
CONTRAST CONTROL
FOCUS CONTROL
VERT HOLD CONTROL
HEIGHT CONTROL
VERT LINEARITY CONTROL
HORIZ HOLD CONTROL
HORIZ DRIVE CONTROL
HORIZ FREQ
WIDTH
HORIZ LINEARITY
FINE TUNING
PHONO INPUT
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+120VDC
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SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
TRUETONE
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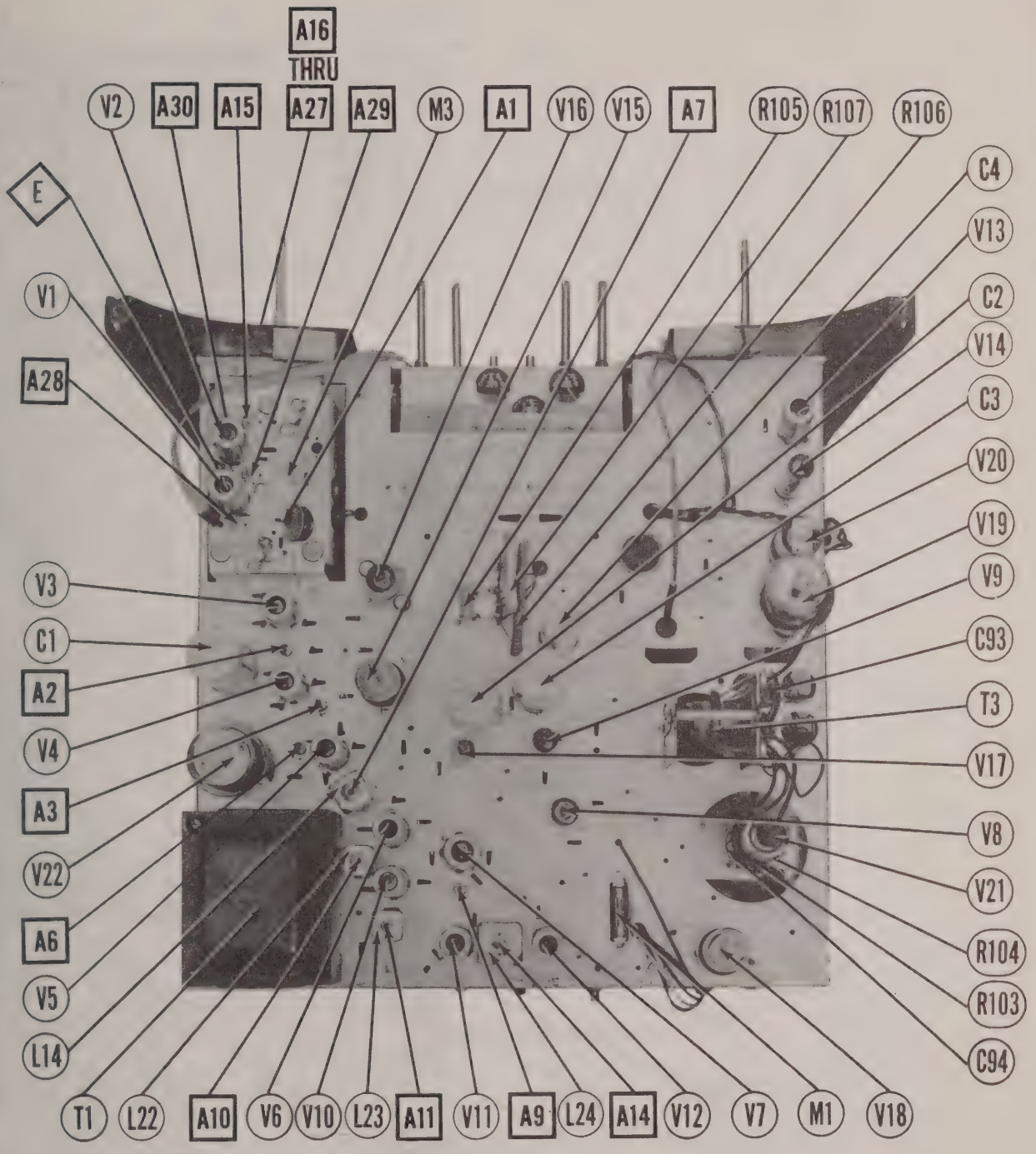
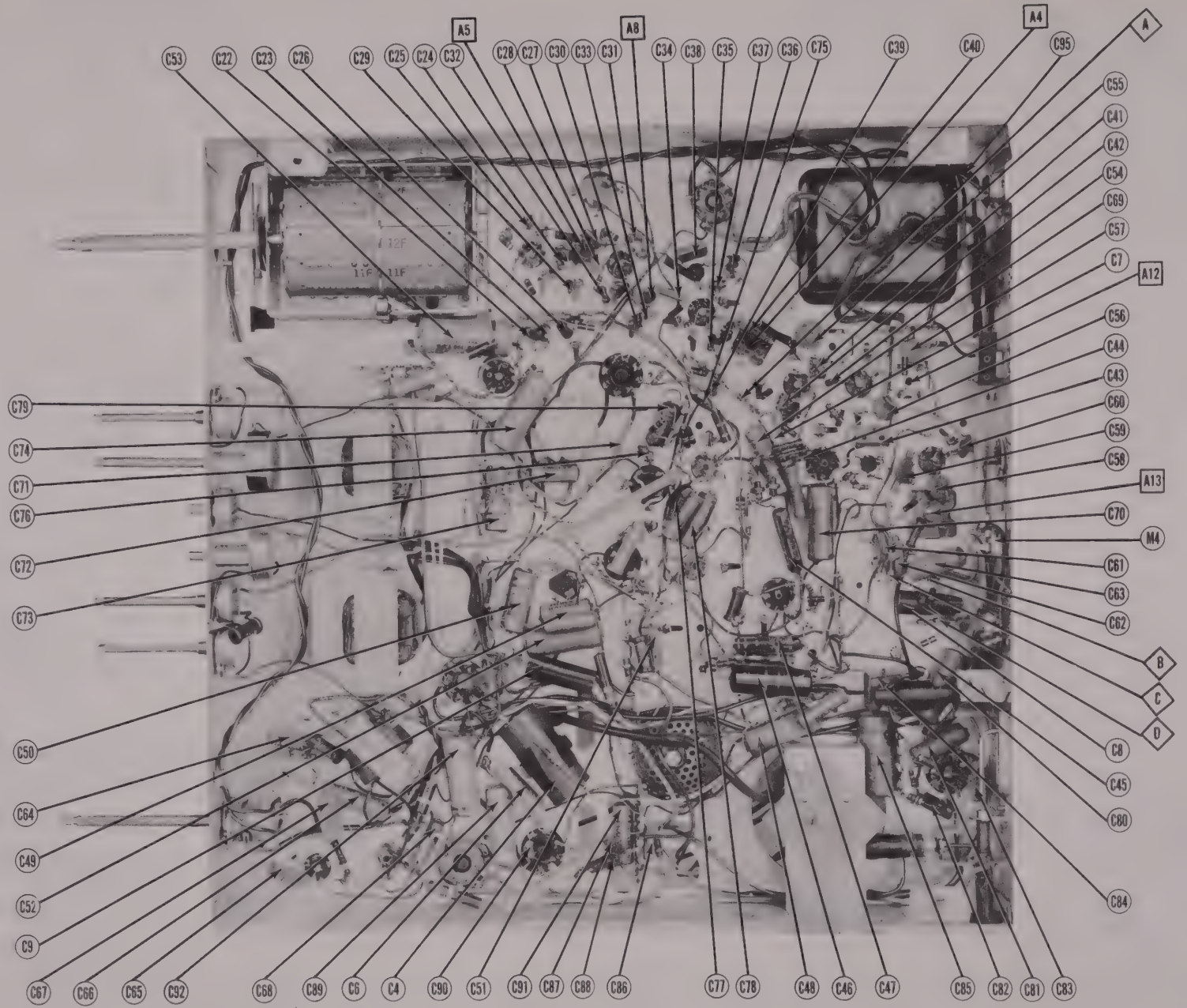
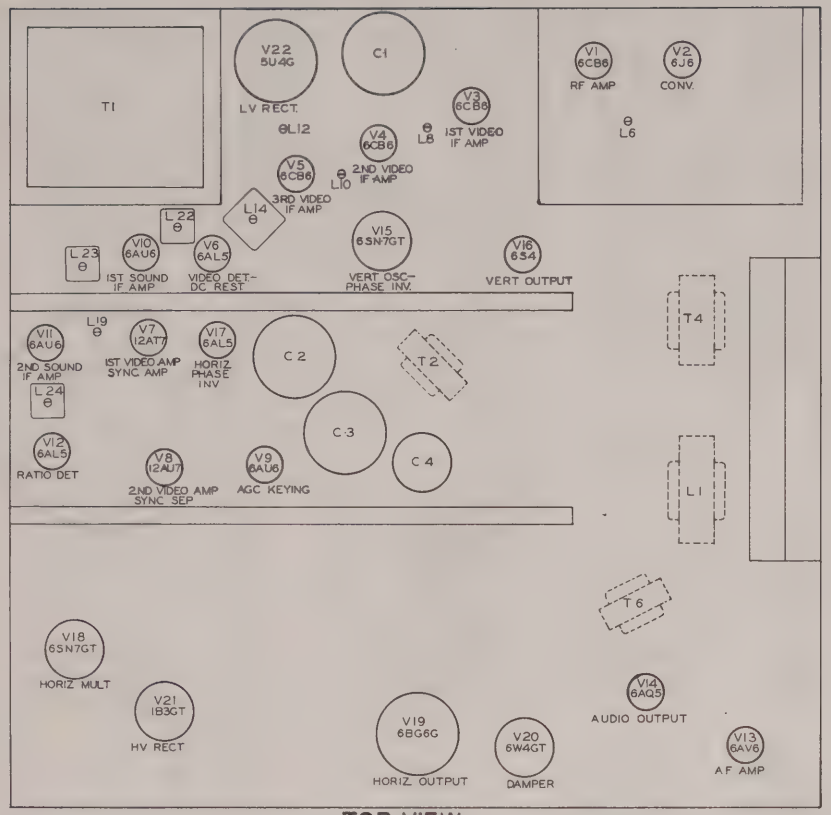


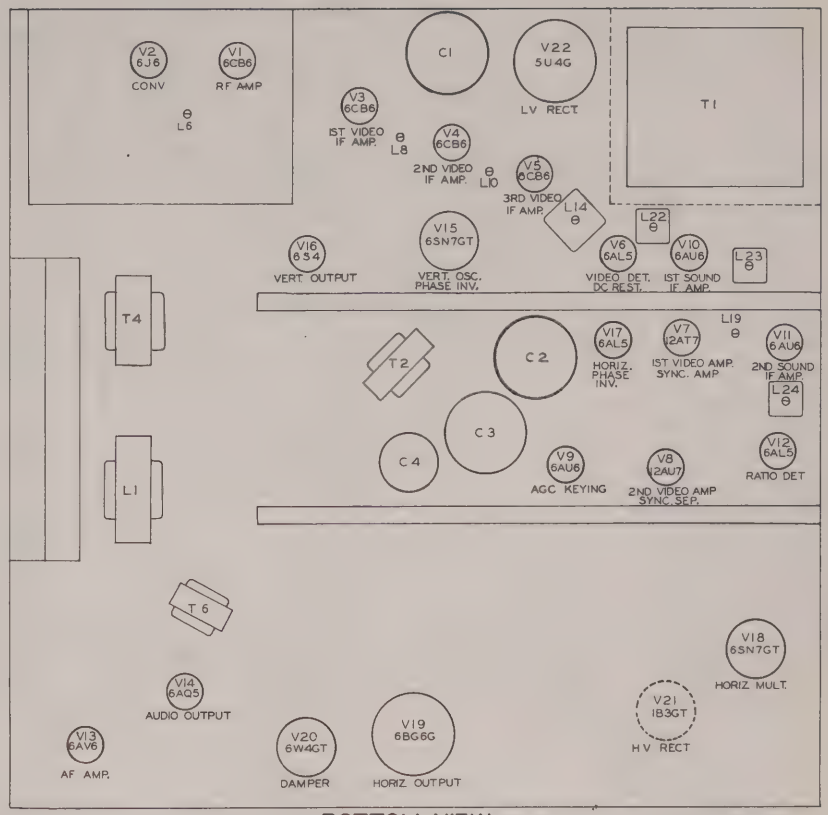
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.

VIDEO IF ALIGNMENT (A VERSIONS ONLY)

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to ungrounded lead of C52, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (unmod.)	Any	DC probe to Point A . Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	22.6MC	"	"	A2	"
3.	"	"	25.8MC	"	"	A3	"
4.	"	"	23MC	"	"	A4	"
5.	"	"	21.5MC	"	"	A5	Adjust for MINIMUM deflection.
6.	"	"	21.8MC	"	"	A6	"
7.	"	"	20.2MC	"	"	A7	"
8.	"	"	27.7MC	"	"	A8	"

VIDEO IF ALIGNMENT (B VERSIONS ONLY)

See instructions under A version Video IF alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.1MC (unmod.)	Any	DC Probe to Point A . Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A7	Adjust for MINIMUM deflection. Continue with step 9.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 22.4MC 22.6MC 25.25MC 26.2MC	Any	Vert. Amp. to Point A . Low side to chassis.		Check for response curve similar to fig. 1A or 1B. If necessary retouch A1 thru A4 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	10KΩ resistor	High side thru 10KΩ to pin 2, (Grid) of 12AT7, (V7). Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 2, (Grid) of picture tube. Low side to chassis.	A9	Adjust for MINIMUM 400∿ indication on scope

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect a short across C55.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	10KΩ resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B . Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to Point C . Common to Point D .	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	10KΩ resistor	High side thru 10KΩ to pin 7 (plate) of 6AL5, (V10). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point B . Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 2.
12.	"	"	"	"	"	Vert. Amp. to Point C . Low side to chassis.	A14	Reconnect capacitor C8. Adjust A14 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

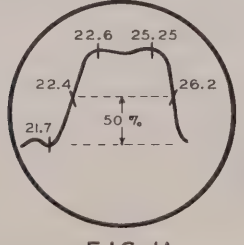


FIG. 1A

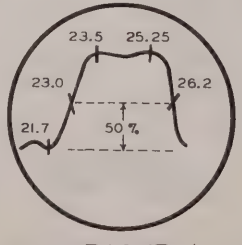


FIG. 1B

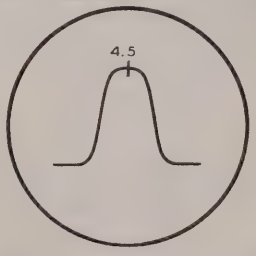


FIG. 2

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A15. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A15 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point A . Low side to chassis.	A16	Adjust to place sound marker in "notch" as per fig. 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A17	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A18	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A19	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A20	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A21	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A22	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A23	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A24	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A25	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A26	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A27	

RF AND MIXER ALIGNMENT

Leave the 3 volts bias connected as during video IF alignment.
Remove the AGC keying tube, (V9) from its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point E . Low side to chassis.	A28, A29 A30	Adjust for response curve similar to fig. 5 with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 5. If markers fall below 70% on any channel, make slight adjustments of A38, A29, and A30 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.25MC	5			
			69MC (10MC SWP)	67.85MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

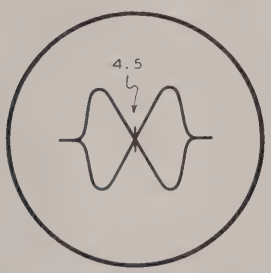


FIG. 3

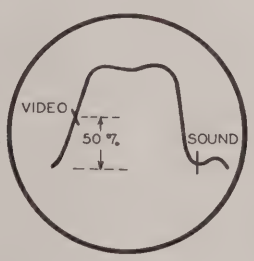


FIG. 4

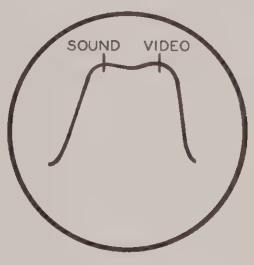


FIG. 5

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal frequency slug, (B1), to the center of the range over which the picture synchronizes horizontally.
Turn the horizontal drive control clockwise until white, beaded, vertical lines appear in the left center portion of the picture. Then turn the control counter-clockwise just enough to remove the lines.
Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B), until the picture is symmetrical from left to right.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	.4VDC	0V	6.3VAC	0V	80VDC	80VDC	0V		
V 2	6J6	65VDC	75VDC	6.3VAC	0V	1.6VDC	§-3.7VDC	0V		
V 3	6CB6	-.1VDC	.5VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 4	6CB6	-.1VDC	.6VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 5	6CB6	0V	1.2VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 6	6AL5	0V	0V	0V	6.3VAC	1.8VDC	0V	-1.5VDC		
V 7	12AT7	75VDC	-.2VDC	0V	6.3VAC	6.3VAC	285VDC	0V	6.4VDC	0V
V 8	12AU7	220VDC	0V	10.3VDC	6.3VAC	6.3VAC	14VDC	0V	2.1VDC	0V
V 9	6AU6	100VDC	105VDC	0V	6.3VAC	-.4VDC	240VDC	105VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	100VDC	100VDC	.2VDC		
V 11	6AU6	0V	0V	6.3VAC	0V	100VDC	100VDC	1.1VDC		
V 12	6AL5	-.3VDC	-.3VDC	0V	6.3VAC	0V	0V	-.6VDC		
V 13	6AV6	-.5VDC	0V	6.3VAC	0V	-.5VDC	-.5VDC	70VDC		
V 14	6AQ5	0V	13VDC	0V	6.3VAC	195VDC	210VDC	0V		
V 15	6SN7GTA	§18VDC	75VDC	16VDC	-58VDC §-32VDC	275VDC 105VDC	0V	0V	6.3VAC	
V 16	6S4	0V	39VDC 18VDC	0V	0V	6.3VAC	0V	0V	0V	550VDC
V 17	6AL5	13VDC	-4.4VDC	0V	6.3VAC	0V	0V	0V		
V 18	6SN7GT	§1VDC	310VDC	16VDC	§-8.4VDC	220VDC 180VDC	16VDC	0V	6.3VAC	
V 19	6BG6G	0V	0V	13VDC	370VDC	-22VDC	-22VDC	6.3VAC	320VDC	Top Cap *
V 20	6W4GT	0V	540VDC	610VDC	0V	370VDC	600VDC	610VDC	610VDC	
V 21	1B3GT	* DO NOT MEASURE								Top Cap *
V 22	5U4G	0V	380VDC	0V	370VAC	0V	370VAC	0V	380VDC	
V 23	20CP4	0V	1.2VDC	Pin 10 300VDC	Pin 11 110VDC 8VDC	Pin 12 6.3VAC	H.V. Connector * * 12.2KV			

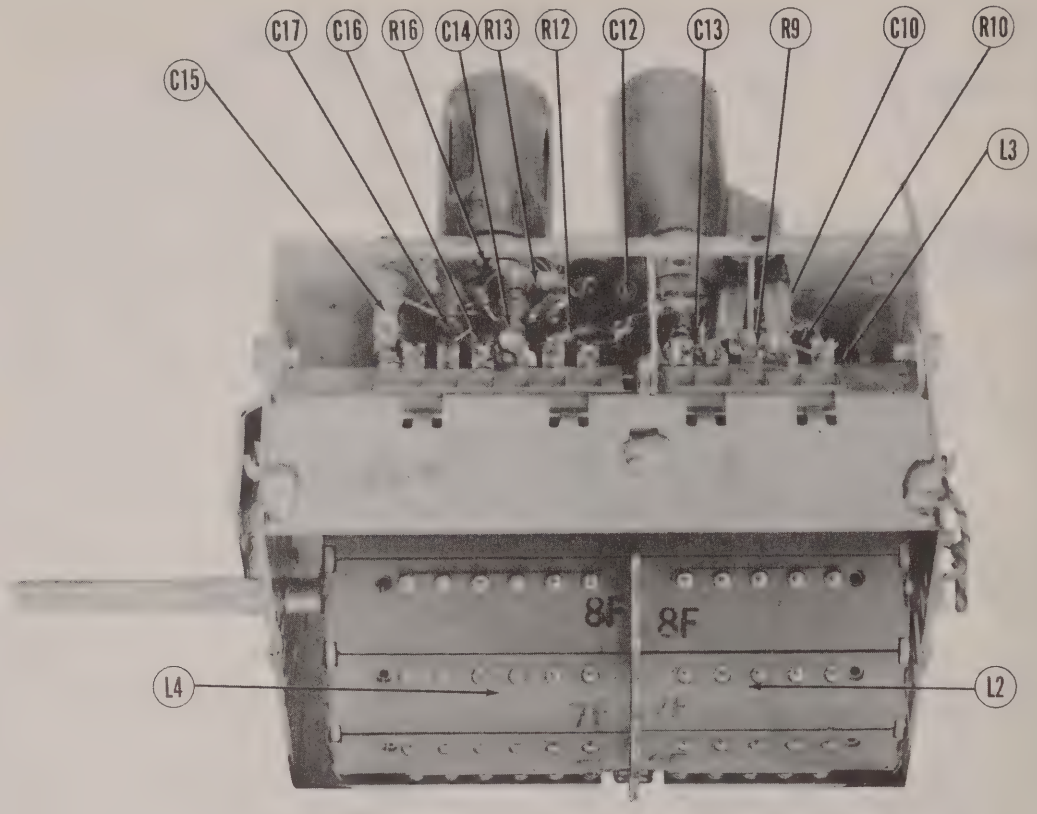
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
FOCUS CONTROL FULLY COUNTERCLOCKWISE.
TV - PHONO SWITCH IN TV POSITION.
* DO NOT MEASURE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* * USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE.

RESISTANCE READINGS

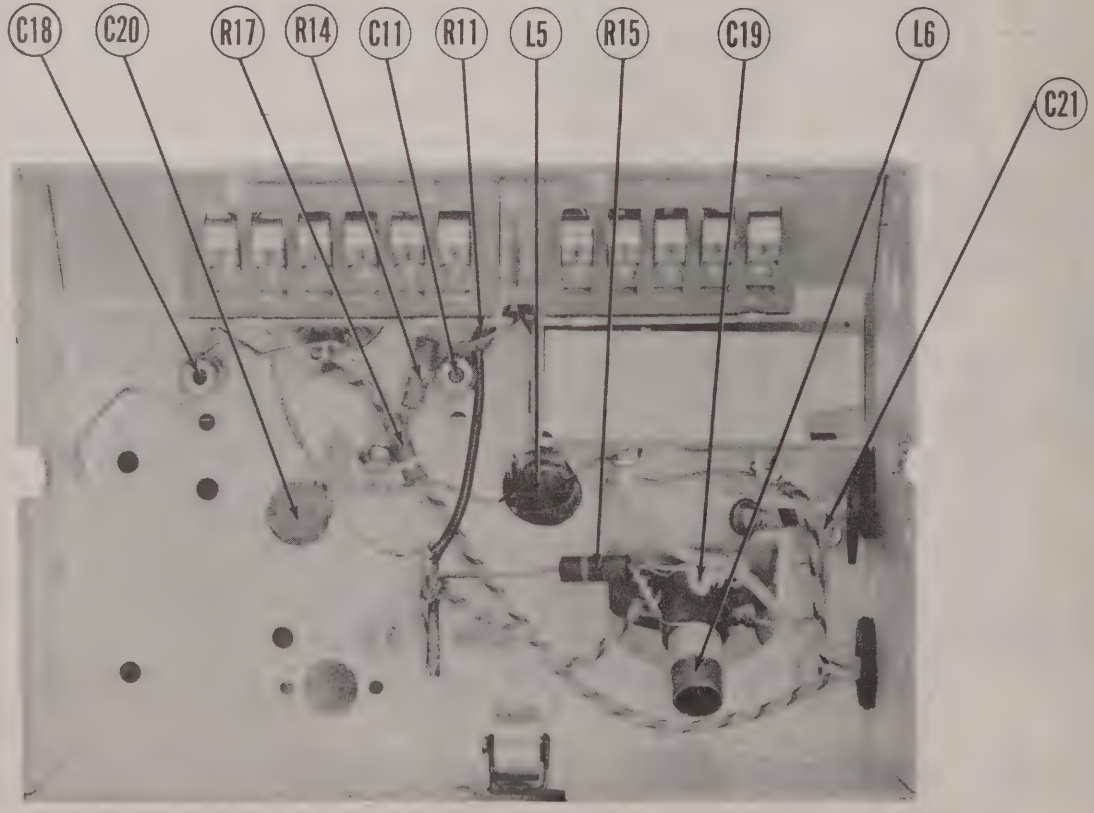
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	460KΩ	0Ω	.1Ω	0Ω	†5KΩ	†5KΩ	0Ω		
V 2	6J6	†7.5KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 4	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 5	6CB6	15KΩ	180Ω	.1Ω	0Ω	†4.3KΩ	†4.3KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5.6KΩ		
V 7	12AT7	†11KΩ	5.6KΩ	.3Ω	.1Ω	.1Ω	†13KΩ	1Meg	22KΩ	0Ω
V 8	12AU7	†6KΩ	1Meg	3.1KΩ	.1Ω	.1Ω	†820KΩ	0Ω	47KΩ	0Ω
V 9	6AU6	†35KΩ	†2.8KΩ	0Ω	.1Ω	365KΩ	†1.3KΩ	†2.8KΩ		
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†3.8KΩ	†3.8KΩ	100Ω		
V 11	6AU6	2.6Ω	0Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	180Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	11KΩ		
V 13	6AV6	10Meg	0Ω	.1Ω	0Ω	400KΩ	400KΩ	†550KΩ		
V 14	6AQ5	500KΩ	390Ω	0Ω	.1Ω	†2.8KΩ	†2.3KΩ	500KΩ		
V 15	6SN7GTA	†820KΩ	†9.5KΩ	3.3KΩ	2.5Meg 1Meg	#4Meg #1.5Meg	0Ω	0Ω	.1Ω	
V 16	6S4	Inf.	5.8KΩ 820Ω	1.8Meg	0Ω	.1Ω	1.8Meg	Inf.	Inf.	#7.8KΩ
V 17	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	27KΩ	Inf.	27KΩ		
V 18	6SN7GT	5.2Meg	†5.7KΩ	1.2KΩ	100KΩ 82KΩ	#380KΩ #225KΩ	1.2KΩ	0Ω	.1Ω	
V 19	6BG6G	Inf.	0Ω	150Ω	†52Ω	1Meg	1Meg	.1Ω	†7.5KΩ	Top Cap #18Ω
V 20	6W4GT	Inf.	#6.8KΩ	223KΩ	Inf.	†52Ω	#12Ω	#8Ω	#8Ω	
V 21	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #185Ω
V 22	5U4G	Inf.	12KΩ	Inf.	24Ω	Inf.	22Ω	Inf.	12KΩ	
V 23	20CP4	0Ω	1.1Meg	Pin 10 †600Ω	Pin 11 †195KΩ †120KΩ	Pin 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
FOCUS CONTROL FULLY COUNTERCLOCKWISE.
TV-PHONO SWITCH IN TV POSITION.
† MEASURED FROM PIN 2 OF V22.
# MEASURED FROM PIN 3 OF V20.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	6CK	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	6CK	
V4	2nd. Video IF Amp.	6CB6	6CB6	6CK	
V5	3rd. Video IF Amp.	6CB6	6CB6	6CK	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	1st. Video Amp.-Sync. Amplifier	12AT7	12AT7	9A	
V8	2nd. Video Amp.-Sync. Separater	12AU7	12AU7	9A	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Vert. Oscillator-Phase Inverter	6SN7GTA	6SN7GTA	8BD	
V16	Vertical Output	6S4	6S4	9AC	
V17	Horizontal Phase Detector	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	TRUETONE PART No.	SYLVANIA PART No.	THOMAS PART No.		
V23	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	450	45X376	AFH2-49		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Filter
C2A	80	450	45X384	AFH2-66		UPT8045		TVL-2710	▲ Filter
B	40	50				V5			▲ Audio Output Cathode
C3A	80	450	45X376	AFH2-49		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Vert. Output Decoupling
C4	20	450	45X382	PRS450/20		BR2045A		TVA-1709	Vert. Output Decoupling
C5A	10	450	45X385			UPT2150		TVL-1705	■ Aduio Output Decoupling
B	100	50				V10		TVA-1310	▲ Vert. Output Cathode
C6	5	25	45X378	PRS150/4		BR550		TVA-1203	Horiz. Output Cathode
C7	5	25	45X378	PRS150/4		BR550		TVA-1203	Sync. Amp. Cathode
C8	5	25	45X378	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C9	4	100	45X361	PRS150/4		BR415		TVA-1402	AGC Filter
C10	3-9		31B-207		829-10				Variable Trimmer
C11	.5-3		31B-205		829-3				Variable Trimmer
C12	120		13B-033		TCN-120		N750L-121		RF Amp. Decoupling
C13	1000		13D-041	SI100	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100		13D-046	SI100N750	TCN-100		N750L-101	5TCC-T1	RF Coupling
C15	.5-3		31B-205		829-3				Variable Trimmer
C16	20		13D-042	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C17	10		13D-064	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C18	.5-3		31B-206		829-3				Variable Trimmer
C19	10		13D-053	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C20A	1000		13D-071	BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Bypass
B	1000								Conv. Filament
C21	120		13B-033		TCN-120		N750L-121		IF Coupling
C22	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C23	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C24	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Decoupling
C25	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Filament
C26	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C27	91	500			TCZ-91		NP0-333-910		Fixed Trimmer
C28	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	5TCC-Q47	IF Coupling
C29	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C30	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Decoupling
C31	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Filament
C32	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C33	51	500		1469-00005	TCZ-51	5R5Q5	NP0-333-510		Fixed Trimmer
C34	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	5TCC-Q47	IF Coupling
C35	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Decoupling
C36	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Cathode
C37	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Filament
C38	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Fixed Trimmer
C39	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C40	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	IF Coupling
C41	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Filament
C42	5		47X562	SI5NP0	TCZ-5		NP0K-050		Diode Load Cap.
C43	360	500	47X568	1469-00035	TCN-360		N750L-361		Fixed Trimmer
C44	68		47X599	SI68	D6-680	5R5Q7	GP1K-680	5GA-Q68	Video Coupling
C45	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling †
C46	.1	600	46X403	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C47	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling †
C48	.1	200	B65104	P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Cathode
C49	.015	600	F65153	P688-015		PTE6S15		6TM-S15	Vert. Sweep Coupling
C50	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Network
C51	1000	1000	47X569	1464-HV-001					Horiz. Sweep Coupling
C52	.25	200	B65254	P488-25		GT4P25		2TM-P25	AGC Filter
C53	.5	200	B65504	P288-5		GT2P5		2TM-P5	AGC Filter

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	15		47X584	SII-SNPO	TCZ-1.5		N90K-1R5		Sound IF Coupling
C55	10000		47X595	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C56	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Sound IF Decoupling
C57	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C58	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Decoupling
C59	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Cathode
C60	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Filament
C61	470	500	47X525	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	RF Bypass
C62	470	500	47X525	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	De-emphasis
C63	.05	600	F65503	P688-05	DF-503	PTE8S5		6TM-S5	Audio Coupling
C64	.005	600	F65502	P688-005	D6-502	PTE8D5	GP2-333-502	6TM-D5	Tone Compensation
C65	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.05	400	[illegible]	P488-05	DF-503	PTE4S5		4TM-S5	AF Amp. Plate
C67	.01		†76X5	P688-01	†PC-80	PTE8S1	GP2-333-103	6TM-S1	Audio Coupling
C68	.005	600	F65502	P688-005	D6-502	PTE8D5	GP2-333-502	6TM-D5	Audio Output Plate
C69	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Audio Output Plate
C70	1	400	D65104	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C71A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Network
B	.005		♦76X7	P688-005	♦PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Network
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Network
C72	4700	500	47X543	1464-005	D6-472	1DR5D5	GP2-333-472	MS-25	Vert. Osc. Grid
C73	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C74	.25	400	D65254	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C75	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C76	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C77	.01	400	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Filter
C78	.05	200	[illegible]	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C79	.005	600	F65302	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C80	.25	200	B65254	P488-25		GT2P25		2TM-P25	AFC Filter
C82	.05	200	B65503	P288-05	DF-503	PTE4S5		2TM-S5	Horiz. MV Grid
C82	47	500	47X565	1469-00005	TCZ-47	5R5K5	NP0L-470	MS-45	Horiz. MV Grid
C83	330	500	47X570	1469-00035	TCN-330		N750L-331		Horiz. MV Feedback
C84	4700	500	47X543						Fixed Trimmer
C85	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. MV Decoupling
C86	470	500	47X525	1469-0005	TCN-470	5R5T5	N750L-471	MS-35	Horiz. Discharge
C87	620	500	RCM20B621K						Horiz. Sweep Coupling
C88	130	500	RCM20A131K	1469-00015	TCN-130	5R5T15	N750L-131		Horiz. Output Grid
C89	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C90	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Output Screen
C91	.03	400	D65303	P488-03		PTE6S3		6TM-S3	Horiz. Sweep Coupling
C92	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C93	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Fixed Trimmer
C94	500	20000	47X560	HV20C	TV3-502				HV Filter
C95A	10000		76X8	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	Line Filter
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Line Filter
C96	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid ¶

† Items C67, R64A, R64B are combined in one unit.
♦ Items C71A, C71B, C71C, R77A, R77B, R77C are combined in one unit.
‡ Some models use .05MFD in this application (Mfgrs Part # D65503).
¶ Used in series B only.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	3000Ω	½		Concentrikit			
B	1Meg	½	78X6	B13-114 ♦ #			Contrast Control - Front
C	Shaft End			B13-137X ♦			Volume Control - Tapped@ 200KΩ - Rear
D	Switch			E-202 ♦			Attach Per Instructions in Concentrikit
R2A	25KΩ	½	40X336	76-1 ♦	AG-40-S	B-26	Attach Per Instructions in Concentrikit
B	Shaft		Not Req	Q11-120	KSS-3	Not Req.	Horizontal Hold Control
R3A	500KΩ	½	40X333	Not Req	AG-58-S	B-59	Attach to R2A Per Instructions
B	Shaft		Not Req.	Q11-133	KSS-3	Not Req.	Brightness Control
R4A	5000Ω	½	40X294	Not Req.	AM-19-S		Attach to R3A Per Instructions
B	Shaft		Not Req.	Q11-114	RS-2 §		Vertical Linearity Control
C	Bushing		Not Req.	PQ §	S-3 §	59-186 §	Attach to R4A Per Instructions
R5A	2.5Meg	½	40X293	S-3 §	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Q11-239	RQ	FKS-1/4	Attach to R5A Per Instructions
R6	4000Ω	2	40X335	Not Req.		AK-1	Focus Control - Wire Wound
R7A	1.5Meg	½	40X334	Q11-138	AG-83-S	AN-75	Vertical Hold Control - See Note
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R7A Per Instructions
R8A	150KΩ	½	40X331		AG-52-S	B-44	Horizontal Drive Control
B	Shaft		Not Req.		FKS-1/4	Not Req.	Attach to R8A Per Instructions

Note Some models use 1Meg control in this application.
♦ Additional parts to be used with concentrikit.
When making this replacement connect a BTS-8200 (IRC) between the two terminals that are used on the contrast control.
§ Cut bushing and fashion shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω	½	12A-046	BTS-3900	Antenna Coil Shunt
R10	47KΩ	20%	12A-039	BTS-47K	AGC Network
R11	2200Ω	20%	12A-049	BTS-2200	RF Amp. Decoupling
R12	10KΩ	20%	12A-040	BTS-10K	RF Coil Shunt
R13	4700Ω	20%	12A-042	BTS-4700	Mixer Grid
R14	220KΩ	20%	12A-041	BTS-220K	Mixer Grid
R15	15KΩ	20%	12A-021		Mixer Plate
R16	10KΩ		12A-040	BTS-10K	Osc. Grid
R17	4700Ω		12A-042	BTS-4700	Osc. Plate
R18	1000Ω		B85102	BTS-1000	AGC Network
R19	1000Ω		B85102	BTS-1000	AGC Network
R20	3900Ω	5%	B83392	BTS-3900-5%	1st Video IF Amp. Grid - See Note 8
R21	47Ω	5%	B83470		1st Video IF Amp. Cathode
R22	1000Ω		B85102	BTS-1000	1st Video IF Amp. Decoupling
R23	10KΩ	5%	B83103		2nd Video IF amp. Grid - See Note 9
R24	47Ω	5%	B83470		2nd Video IF Amp. Cathode
R25	1000Ω		B8410-	BTS-1000	2nd. Video IF Amp. Decoupling
R26	150Ω		B84151	BTS-150	Decoupling
R27	15KΩ	20%	B83153	BTS-15K	3rd Video IF Amp. Grid - See Note 9

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
R28	180Ω	½	B84181	BTS-180	3rd Video IF Amp. Cathode
R29	1500Ω	½	B85152	BTS-1500	3rd. Video IF Amp. Decoupling
R30	22KΩ	½	B84223	BTS-22K	Plate Choke Shunt
R31	2700Ω	5% 1	C83272	BTA-2700-5%	Voltage Divider
R32	33KΩ	½	B84333	BTS-33K	AGC Keying Grid
R33	47KΩ	½	B84473	BTS-47K	AGC Network
R34	820KΩ	½	B84824	BTS-820K	Voltage Divider - See Note 11
R35	22KΩ	½	B84223	BTS-22K	Diode Load
R36	47KΩ	½	B84473	BTS-47K	AGC Network
R37	200KΩ	5% ½			AGC Network - See Note 10
R38	100KΩ	½	B85104	BTS-100K	AGC Network
R39	5600Ω	½	B84562	BTS-5600	Video Det Diode Load
R40	5600Ω	½	B84562	BTS-5600	1st Video Amp. Plate - See Note 4
R41	1Meg	20% ½	B85105	BTS-1Meg	2nd Video Amp. Grid
R42	100Ω	½	B84101	BTS-100	2nd Video Amp. Cathode
R43	4700Ω	5% 1	C83472	BTA-4700	2nd Video Amp. Plate
R44	10KΩ	5% ½	B83103	BTS-10K-5%	Isolation
R45	1Meg	20% ½	B85105	BTS-1Meg	DC Restorer Diode Load
R46	2200Ω	20% ½	B85222	BTS-2200	Vert. Retrace Blanking Network
R47	47KΩ	½	B84473	BTS-47K	Voltage Divider
R48	100KΩ	½	B85104	BTS-100K	Picture Tube Grid
R49	22KΩ	½	B84223	BTS-22K	Picture Tube Cathode
R50	100KΩ	½	B84104	BTS-100K	Picture Tube Cathode
R51	100Ω	½	B84101	BTS-100	1st. Sound IF Amp. Cathode
R52	1000Ω	½	B84102	BTS-1000	1st. Sound IF Amp. Decoupling
R53	180Ω	½	B84181	BTS-180	2nd. Sound IF Amp. Cathode
R54	1000Ω	½	B84105	BTS-1000	2nd. Sound IF Amp. Decoupling
R55	5600Ω	½	B84562	BTS-5600	Ratio Det. Diode Load
R56	5600Ω	½	B84562	BTS-5600	Ratio Det. Diode Load
R57	120Ω	½	B84121	BTS-120	Balancing
R58	68KΩ	½	B84683	BTS-68K	De-emphasis
R59	470KΩ	½	B84474	BTS-470K	AVC Network
R60	100KΩ	½	B84104	BTS-100K	AVC Network - See Note 2
R61	68KΩ	½	B84683	BTS-68K	Tone Compensation
R62	10Meg	20% ½	B85106	BTS-10Meg	AF Amp. Grid
R63	47KΩ	½	B84473	BTS-47K	AF Amp. Plate Decoupling
R64A	500KΩ	½	76X5 †	BTS-470K	AF Amp. Plate
B	500KΩ	½		BTS-470K	AF Amp. Cathode
R65	390Ω	½	C84391	BTA-390	Output Cathode
R66	1000Ω	2	D84102	BTB-1000	Output Decoupling
R67	10KΩ	½	B84103	BTS-10K	Isolation
R68	1Meg	20% ½	B85105	BTS-1Meg	Sync. Amp. Grid
R69	22KΩ	½	B84223	BTS-22K	Sync. Amp. Cathode
R70	12KΩ	½	B84123	BTS-12K	Sync. Amp. Plate
R71	2200Ω	½	B84222	BTS-2200	Isolation
R72	47KΩ	½	B84473	BTS-47K	Sync. Sep. Cathode
R73	820KΩ	½	B84824	BTS-820K	Sync. Sep. Plate
R74	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Cathode
R76	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R76	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R77A	22KΩ	½	76X7 ♦	BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R78	1Meg	½	B84105	BTS-1Meg	Vert. Osc. Grid - See Note 12
R79	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Plate
R80	4700Ω	5% ½	B83472	BTS-4700-5%	Vert. Peaking
R81	1.8Meg	½	B84185	BTS-1.8Meg	Vert. Output Grid
R82	820Ω	½	B84821	BTS-820	Vert. Output Cathode
R83	6800Ω	2	D84682	BTB-6800	Decoupling
R84	470KΩ	½	B84474	BTS-470K	Bleeder
R85	470KΩ	½	B84474	BTS-470K	Bleeder
R86	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R87	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R88	4.7Meg	20% ½	B85475	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R89	27KΩ	½	B84273	BTS-27K	Horiz. Phase Det. Diode Load
R90	15KΩ	1	C84153	BTA-15K	Horiz. Feedback
R91	470KΩ	½	B84474	BTS-470K	Horiz. AFC Filter
R92	33KΩ	½	B84333	BTS-33K	Horiz. AFC Filter
R93	1200Ω	½	B84122	BTS-1200	Horiz. MV Cathode
R94	5600Ω	½	B84562	BTS-5600	Horiz. MV Plate
R95	82KΩ	½	B84823	BTS-82K	Horiz. MV Grid
R96	180KΩ	½	B84184	BTS-180K	Horiz. MV Plate
R97	47KΩ	20% ½	B84473	BTS-47K	Horiz. MV Decoupling
R98	10KΩ	½	B84103	BTS-10K	Horiz. Peaking
R99	150Ω	½	B84151		Parasitic Suppressor
R100	1Meg	½	B84105	BTS-1Meg	Horiz. Output Grid
R101	150Ω	5	43X263	1 3/4A-150	Horiz. Output Cathode - Wire Wound
R102	7500Ω	15	43X256	2D-7500	Horiz. Output Screen - Wire Wound
R103	5.1Ω	2	43X239	BW-$\frac{1}{2}$-5.1	HV Rectifier Filament - Wire Wound
R104	1Meg	20% ½	C85105		HV Filter
R105	10KΩ	5	43X247	1 3/4A-10K	Bleeder - Wire Wound
R106	1500Ω	15	43X261	2D-1500	Voltage Divider - Wire Wound
R107	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound - See Note 6
R108	1500Ω	15	43X261	2D-1500	Focus Coil Shunt - Wire Wound - See Note 7
R109	2.2Meg	½		BTS-2.2Meg	Voltage Divider - See Note 2
R110	180KΩ	½		BTS-180K	Voltage Divider - See Note 2
R111	470KΩ	½		BTS-470K	Vert. Osc. Coil Shunt - See Note 2

† Items R64A, R64B, and C67 are combined into one unit.
♦ Items R77A, R77B, R77C, C71A, C71B, and C71C are combined into one unit.
Note 2 Not used in all models.
Note 3 Some models use 220KΩ resistor in this application.
Note 4 Some models use parallel resistors in this application to obtain desired value.
Note 5 In models not employing a Focus Coil R108 becomes a Filter resistor.
Note 6 Some models use 250Ω resistor in this application.
Note 7 Some models use 1000Ω resistor in this application.
Note 8 Some models use 8200Ω resistor in this application.
Note 9 Some models use 22KΩ resistor in this application.
Note 10 Some models use 390KΩ resistor in this application.
Note 11 Some models use 3.3Meg resistor in this application.
Note 12 Some models use 1.5Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.1A	750VCT .250ADC	5VAC @ 3A	6.3VAC @ 8A	53X318		P-3059	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.15KΩ	54X7	A-8122 ①	A-3000 ①	TSO-2 ①	Vert. Block Osc. Trans.
T3	185Ω	10.5Ω	53X319		HV0-7 and MWC-1		Horiz. Output Trans.
	Tap 12Ω	Taps .4Ω and 5Ω					
		SEC. 2 4.9Ω					
		SEC. 3 0Ω					
T4	1KΩ		51X151	A-8122 ①	A-3-37 ①	TSO-5 ①	Vert. Output Trans.
	Tap 12Ω						
T5A	18Ω		9A2194	DY-7	MDF-70		Horiz. Deflection Coils
B	50Ω		9A2193 ②				Vert. Deflection Coils
T6	820Ω		9A-2189				Focus Coil
			9A2220 ②				

① Drill one new mounting hole
② Use with series B models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.5KΩ	3.2Ω	465Ω	.2Ω	51X150	A-3823 ①	A-2930	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.2Ω	12A502	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 3/8 "	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	52Ω	2 Henries	52X88	C-2326	C-2991	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	NOTES
L2	Ant. Coils	0Ω	0Ω	9A2119	Channel #2
L3	Fil. Choke	0Ω			
L4	RF Mixer Grid and Osc. Coil	0Ω		9A2131	Channel #2
L5	Fil. Choke	0Ω			
L6	1st Video IF	.7Ω		31A-095	
L7	Fil. Choke	0Ω		9A2033	
L8A	2nd Video IF	.3Ω		9A2165	Includes Trap (Some models do not use trap)
B	2nd Video IF			9A2225	
L9	Fil. Choke	0Ω		9A2033	
L10A	3rd Video IF	.3Ω		9A2166	Includes Trap (Some models do not use trap)
B	3rd Video IF			9A2225	
L11	Fil. Choke	0Ω		9A2033	
L12	Sound Trap	0Ω	.1Ω	9A2169	Not used in all models.
L13	RF Choke	2.8Ω		9A1979	
L14A	4th Video IF	.2Ω		9A2167	Includes Trap.
B	4th Video IF			9A2226	
L15	Peaking	10Ω		36A1	100 Microhenries (yellow dot)
L16	Peaking	35Ω		36A5	750 Microhenries (green dot)
L17	Peaking	16Ω		36A7	190 Microhenries Wound on 22KΩ Resistor (orange dot)
L18	Peaking	16Ω	36A4	36A4	215 Microhenries Wound on 2.2KΩ Resistor (red dot)
L19	4.5MC Trap	.3Ω		9A2074	
L20	Peaking	15Ω		36A8	185 Microhenries Wound on 47KΩ Resistor (brown dot)
L21	Peaking	15Ω		36A2	190 Microhenries (white dot)
L22	1st Sound IF	2.8Ω		9A2168	
L23	2nd Sound IF	2.6Ω	2.6Ω	9A2170	
L24	Ratio Det. Trans.	2.8Ω	.3Ω	9A2171	Tap .8Ω
L25	Horiz. Osc.	50Ω		9A2096	
L26	Width Coil			9A2183	
L27	Horiz. Lin.	4.4Ω		9A2172	Tap 1.5Ω

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

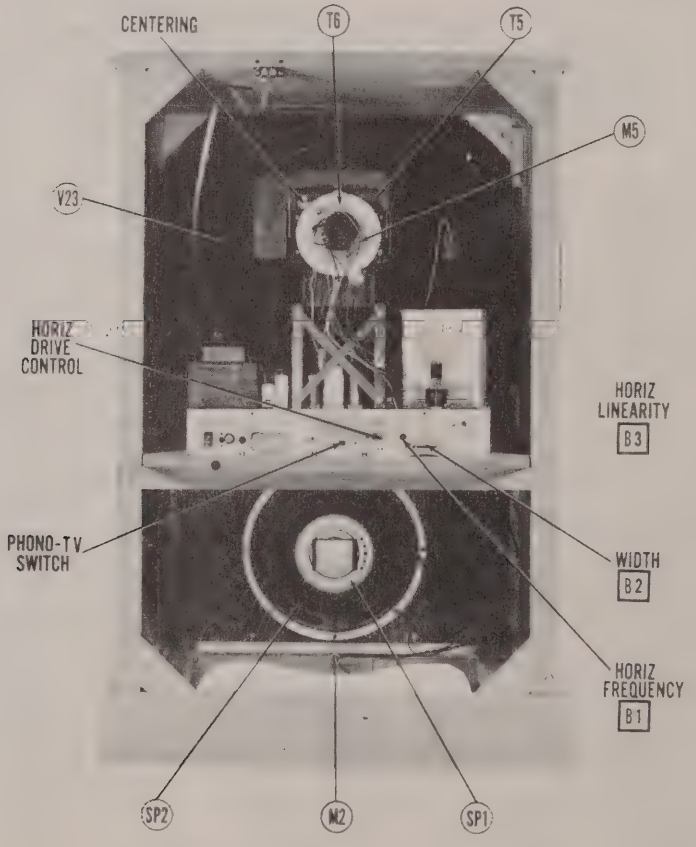
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			TRUETONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250A	16X147	16X146	313.250	357001	

DIAL LIGHTS

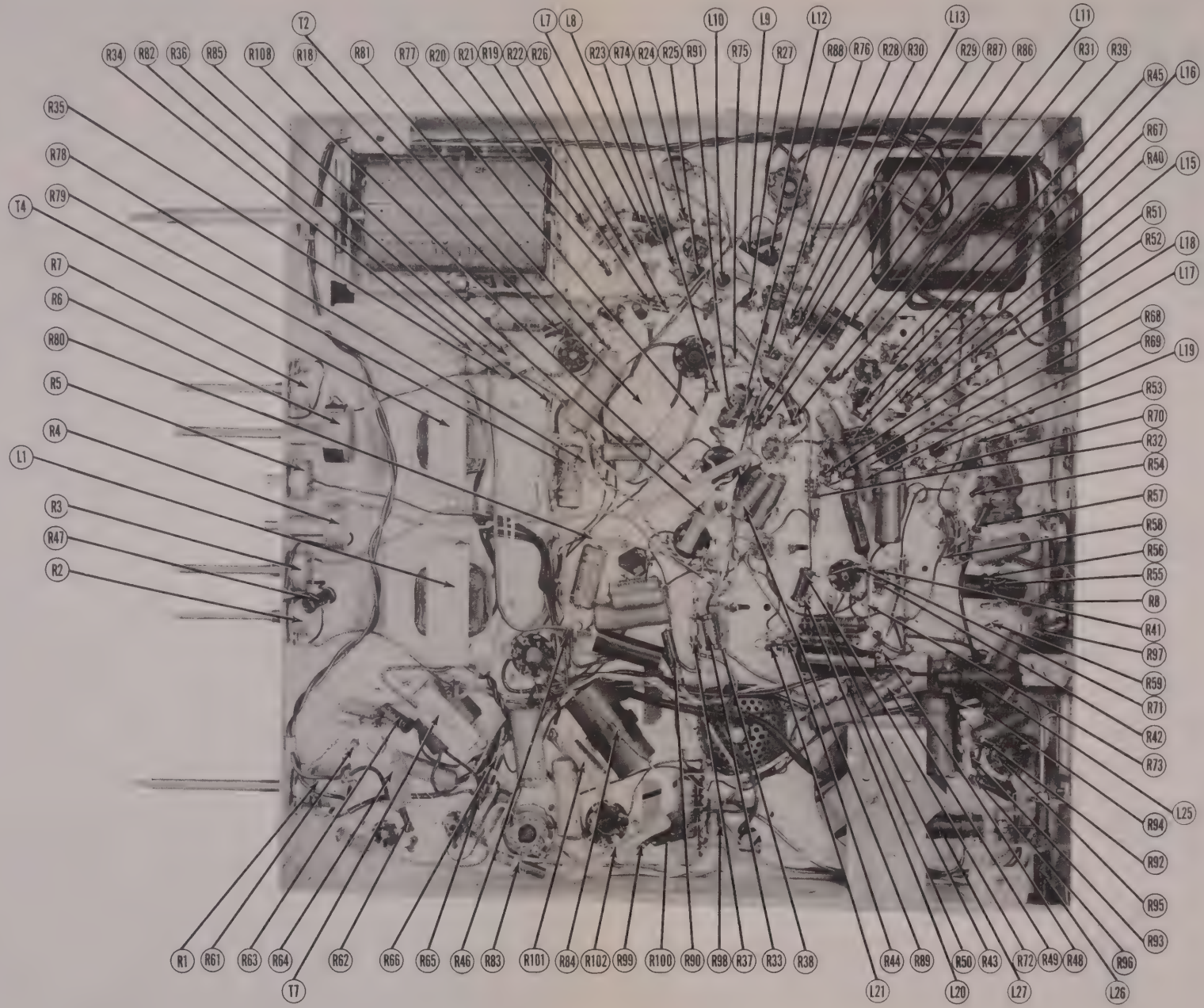
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					TRUETONE PART No.		
M2	Bayonet	75	.2	White	7A32		Type # 51

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	RF Tuner	25A1086	
M4	Switch	2A402	TV-Phono
M5	Ion Trap	2A407	
	Ant. Coil	9A2120	Channel # 3
		9A2121	Channel # 4
		9A2122	Channel # 5
		9A2123	Channel # 6
		9A2124	Channel # 7
		9A2125	Channel # 8
		9A2126	Channel # 9
		9A2127	Channel # 10
		9A2128	Channel # 11
		9A2129	Channel # 12
		9A2130	Channel # 13
	RF Mix. Grid and Osc. Coil	9A2132	Channel # 3
		9A2133	Channel # 4
		9A2134	Channel # 5
		9A2135	Channel # 6
		9A2136	Channel # 7
		9A2137	Channel # 8
		9A2138	Channel # 9
		9A2139	Channel # 10
		9A2140	Channel # 11
		9A2141	Channel # 12
		9A2142	Channel # 13

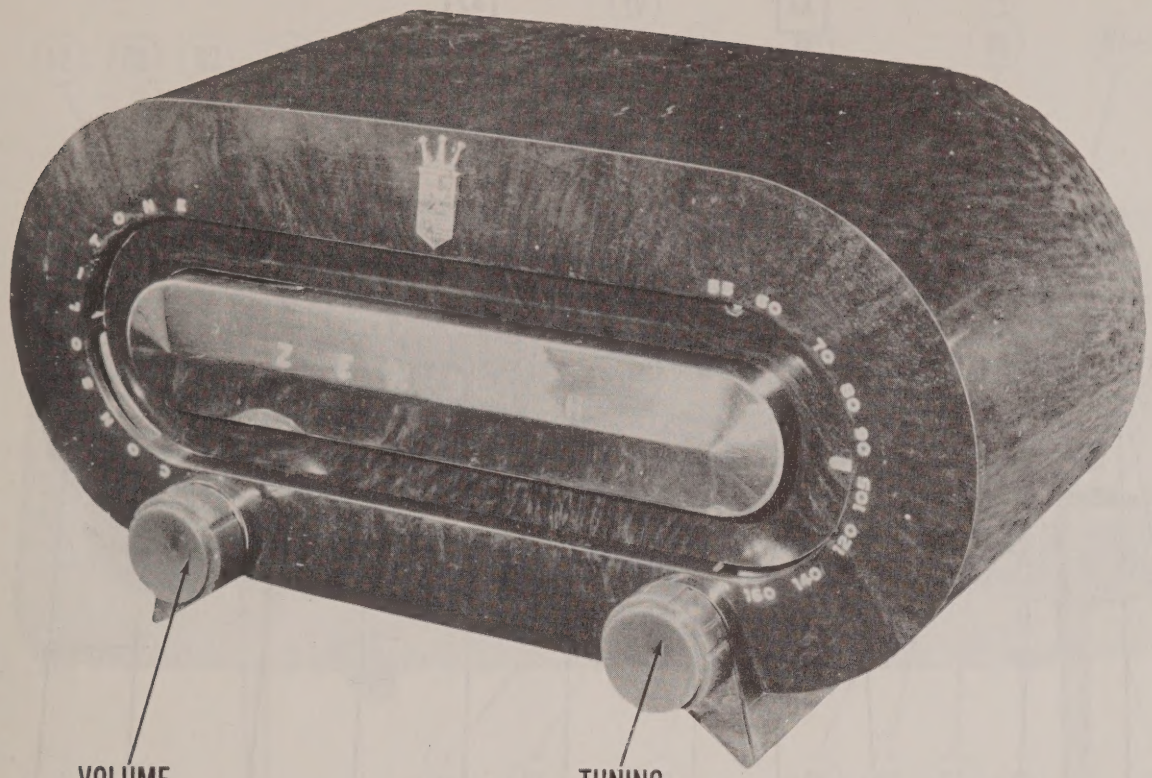


CABINET-REAR VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ZENITH
MODELS H511, H511Y, H511W, (Ch. 5H01)



ZENITH
MODELS H511, H511Y, H511W, (Ch. 5H01)

TRADE NAME	Zenith, Models H511, H511Y, H511W (Ch. 5H01)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET.-AVC-AF, 50L6GT or 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the left hand edge of the first 5 of 55 at the low frequency end of dial scale.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD.	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL H511

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4A	Power Output	50L6GT	50L6GT	7AC	
B	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-1804	AFH3-08		UP42215		TVL-3437	■ Filter
B	20	150							▲ Filter
C2	.05	200	22-1158	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C4A	.005		♦ 105-28	P688-005	♦ PC-70	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
B	250								AF Amp. Plate
C									Output Grid
C5	.05	200	22-1158	P288-05	DF-503	PTE4S5		2TM-S5	Tone Comp.
C6	.02	400	22-1379	P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C7	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Rectifier Plate
C8	.05	200	22-1158	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation
C9	110		22-5 *	SI110					Osc. Grid Cap.

* Alternate part # 22-162 or 22-1669.
♦ Items C4A, C4B, C4C, R9A, R9B are combined in one unit. When replacing separately, C4B and C4C should total 250MMF.

CONTROLS

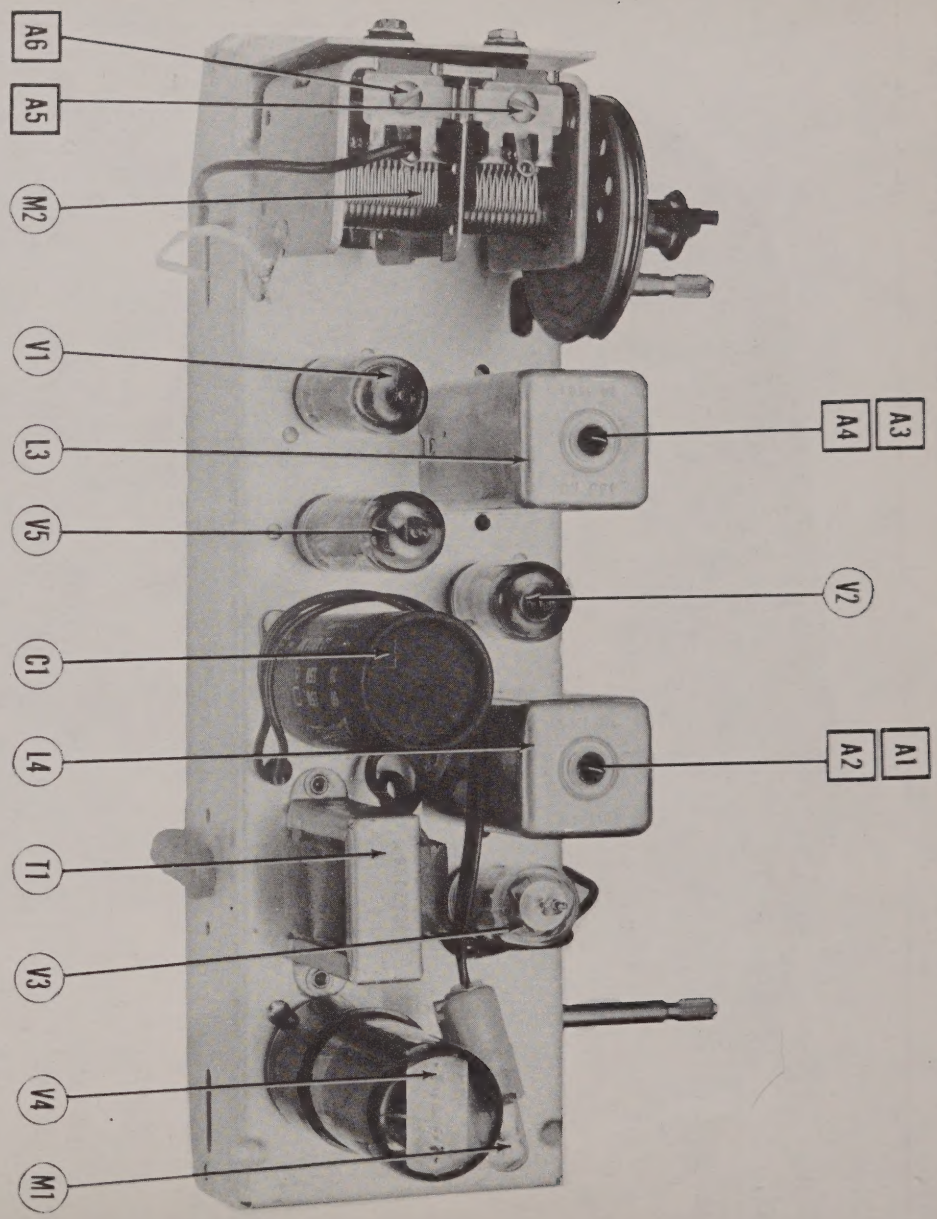
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2271	Q11-133	AG-61-S	SB-228	Volume Control
B	Shaft		Not req.	Not req.	KSS-3		Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R2	330Ω	½		BTS-330	Parasitic Suppressor - See Note 1
R3	10KΩ	½		BTS-10K	Osc. Grid - See Note 2
R4	68Ω	½	63-1737		IF Amp. Cathode
R5	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R6	1800Ω	½	63-1796	BTS-1800	Feedback
R7	10KΩ	½	63-1828	BTS-10K	Tone Compensation
R8	4.7Meg	½	63-1940	BTS-4.7Meg	AF Amp. Grid
R9A	470KΩ	½	♦ 105-28	BTS-270K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R10	150Ω	½	63-686	BW-½-150	Output Cathode - Wire Wound
R11	1000Ω	1	63-1574	BTA-1000	Filter
R12	22Ω	½	63-1219	BW-½-22	Surge Limiter - Wire Wound

♦ Items R9A, R9B, C4A, C4B, and C4C are combined into one unit.
Note 1 Not used in all models.
Note 2 Some models use 22KΩ Resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.2Ω	190Ω	.7Ω	95-1269	A-3332 ①	A-3025	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST803		
SP1	PM	3.2Ω	49-698	Mod. P525-V	52A1	
	CONE DIA.	V. C. DIA.				
SP2	5 1/4"	9/16"				

R F COILS

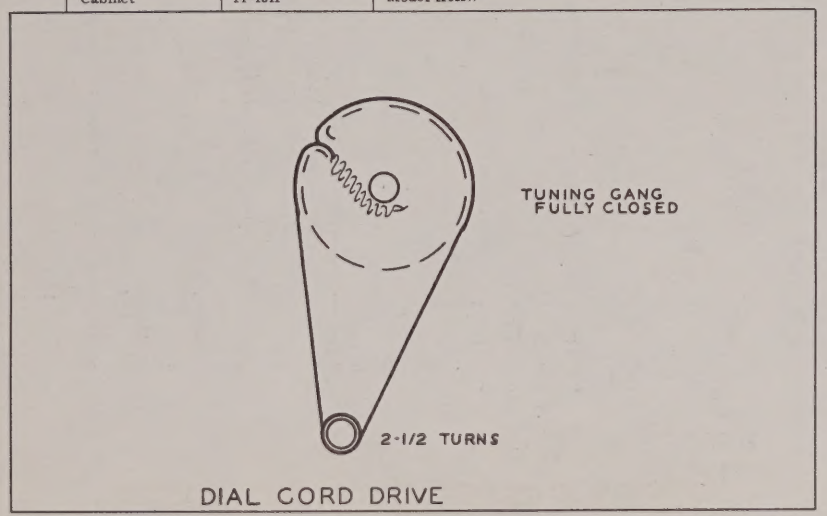
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.		
L1	Loop Ant.	2.5Ω		S-17697		
L2	Osc. Coil	5Ω	.6Ω	S-14842		
L3	1st. IF	25Ω	25Ω	95-1101		
L4	2nd. IF	25Ω	25Ω	95-1102		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M1	Bayonet	6-8	.15	Brown	100-67		Type # 47

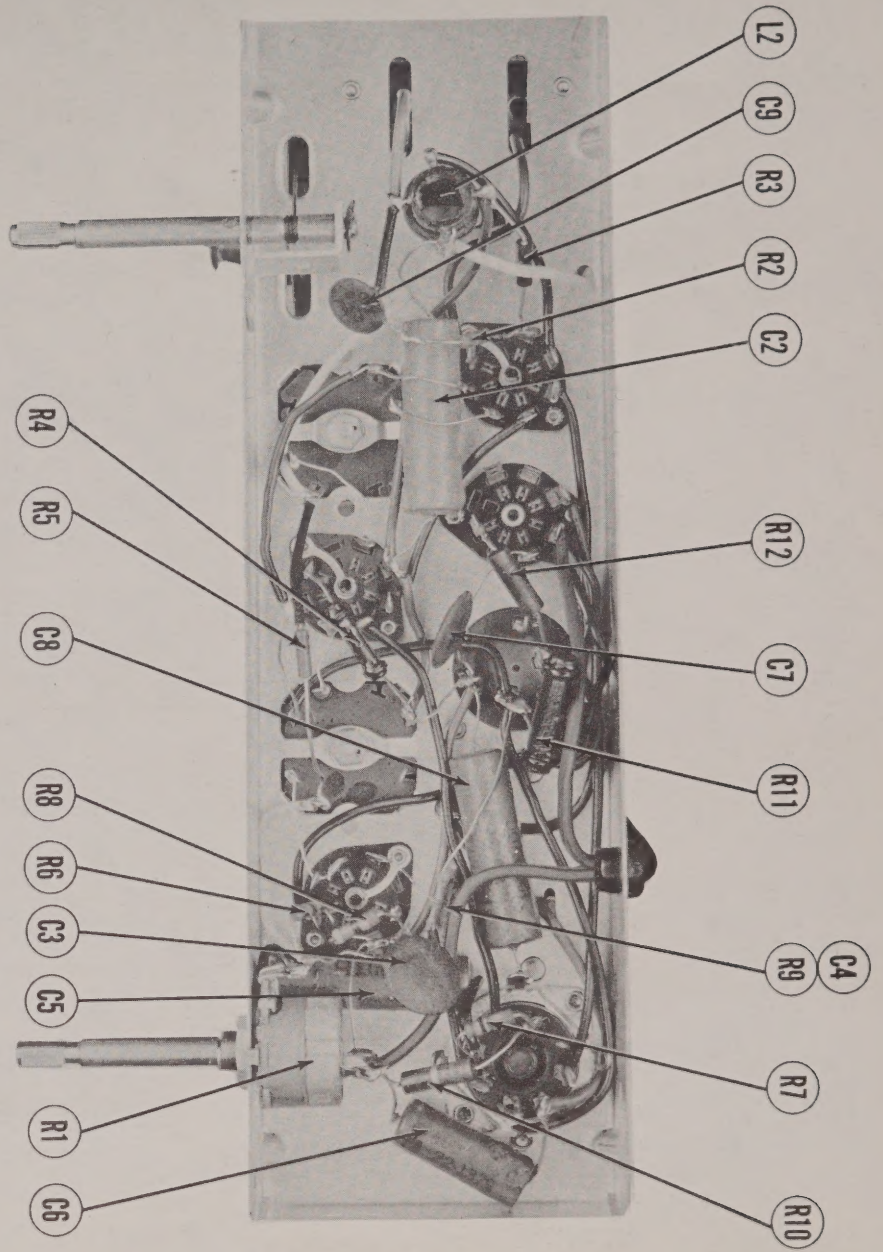
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	2 Gang Var. Cap.	22-2277	(22-468MMF, 38-212MMF)
	Dial Pointer	59-256	
	Cabinet	14-1295	Model H511
	Cabinet	14-1305	Model H511Y
	Cabinet	14-1311	Model H511W

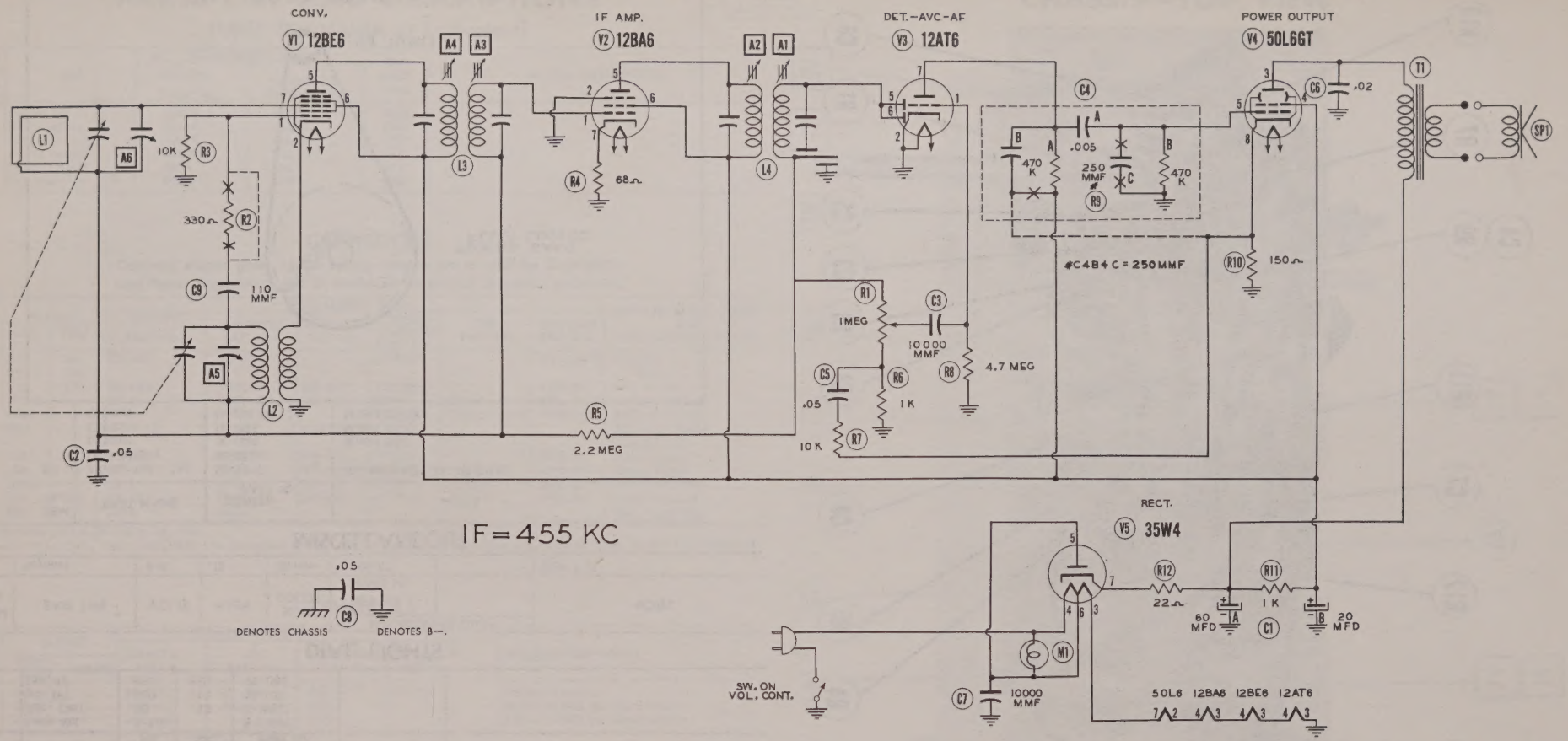


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ZENITH MODEL H511



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	‡-6VDC	0V	12VAC	24VAC	90VDC	90VDC	-.3VDC	
V 2	12BA6	-.2VDC	0V	24VAC	36VAC	90VDC	90VDC	.6VDC	
V 3	12AT6	-.4VDC	0V	0V	12VAC	-.5VDC	-.5VDC	30VDC	
V 4	50L6GT	0V	85VAC	105VDC	85VDC	0V	5.5VDC	36VAC	5.6VDC
V 5	35W4	0V	0V	85VAC	117VAC	110VAC	110VAC	115VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	10KΩ	.6Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.2Meg	
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	68Ω	
V 3	12AT6	4.7Meg	0Ω	0Ω	12Ω	1Meg	1Meg	†470KΩ	
V 4	50L6GT	Inf.	36Ω	†210Ω	†1KΩ	470KΩ	10KΩ	86Ω	150Ω
V 5	35W4	Inf.	Inf.	86Ω	121Ω	105Ω	105Ω	250KΩ	

† MEASURED FROM PIN 7 OF V5.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.